U.S. DEPARTMENT OF COMMERCE
National Technical Information Service

PB-259 869

PROPOSED WASTE TREATMENT FACILITIES PREPARED IN REGARD TO PROJECT C200381. RELOCATION OF INDIAN CREEK CHANNEL AND OTHER IMPROVEMENTS AT THE EXISTING INDIAN CREEK WASTE TREATMENT PLANT, IN PREPARATION FOR ULTIMATE DEVELOPMENT OF THE INDIAN CREEK WASTE TREATMENT PLANT SITE. JOHNSON COUNTY SEWER DISTRICT, INDIAN CREEK BASIN, JOHNSON COUNTY, KANSAS

Environmental Protection Agency,
Kansas City, Missouri

April 1974

BIBLIOGRAPHIC DATA SHEET

1. Report No. EPA/907/9-74/002

2.

3. Recipient's Accession No. PB-259 869

4. Title and Subtitle Proposed Waste Treatment Facilities Prepared in Regard to Project C200381. Relocation of Indian Creek Channel & Other Improvements at the Existing Indian Creek Waste Treatment Plant, in Preparation for Ultimate Development of the Indian

5. Report Date April 1974

6.

7. xxxxxxCreek Waste Treatment Plant Site. Johnson County Sewer District, Indian Creek Basin, Johnson County, Kansas.

8. Performing Organization Rept. No.

9. Performing Organization Name and Address

Environmental Protection Agency
Kansas City, Missouri
Region VII

10. Project/Task/Work Unit No.

11. Contract/Grant No.

12. Sponsoring Organization Name and Address

13. Type of Report & Period Covered

14.

15. Supplementary Notes

(PC A11/MF A01)

16. Abstracts

The Indian Creek Main Sewer District No. 1, Johnson County, Kansas, has applied for Federal financial assistance to provide improvements to the existing treatment plant site, including creek relocation, access driveway, storm sewer and miscellaneous site work. The proposed project is a preparatory step to expansion of the present Indian Creek Sewage Treatment Plant capacity from 70,000 PE to an ultimate 428,000 PE. Environmental impact, benefits, and adverse effects of the project are reported. Alternatives have also been considered from cost effectiveness, environmental effects and other considerations.

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*Johnson County(Kansas)
Alternatives

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FINAL
ENVIRONMENTAL IMPACT STATEMENT
FOR
PROPOSED WASTE TREATMENT FACILITIES

JOHNSON COUNTY SEWER DISTRICT
INDIAN CREEK BASIN
JOHNSON COUNTY, KANSAS

Prepared by:
U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION VII
1735 Baltimore
Kansas City, Missouri 64108

April, 1974

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SPRINGFIELD, VA. 22161

JEROME H. SVORE
REGIONAL ADMINISTRATOR

FINAL

ENVIRONMENTAL IMPACT STATEMENT
FOR
PROPOSED WASTE TREATMENT FACILITIES

Prepared in regard to Project C200381 - Relocation of Indian Creek channel and other improvements at the existing Indian Creek Waste Treatment plant, in preparation for ultimate development of the Indian Creek Waste Treatment Plant Site.

Johnson County Sewer District

Indian Creek Basin

Johnson County, Kansas

Prepared by:

U.S. Environmental Protection Agency
Region VII
1735 Baltimore
Kansas City, Missouri 64108

Jerome H. Svore
Regional Administrator

SUMMARY SHEET

( ) Draft (X) Final

Environmental Impact Statement

Responsible Agency: Air and Water Programs Division
Environmental Protection Agency
Region VII

1. Nature of Proposed Action: (X) Administrative Action
( ) Legislative Action

2. Brief Description: The Indian Creek Main Sewer District No. 1, Johnson County, Kansas, has applied for Federal financial assistance to provide improvements to the existing treatment plant site, including creek relocation, access driveway, storm sewer and miscellaneous site work. The proposed project is a preparatory step to expansion of the present Indian Creek Sewage Treatment Plant capacity from 70,000 PE to an ultimate 428,000 PE. Initially, the Lower Indian Creek plant capacity will be increased from 70,000 PE to 110,000 PE. Over a period of time, two additional plants may be built on the site to serve the upper and middle Indian Creek Basins and Tomahawk Creek Basin at ultimate capacity.

3. Environmental Impact and Adverse Effects: The ultimate development of the existing treatment plant site will increase the average daily flow from 7 mgd to 42.8 mgd to Indian Creek. Advanced waste treatment with disinfection will meet the Kansas Water Quality Standards. The concentration levels of pollutants in the discharge will be reduced from the present level with increased treatment efficiency, however, the total loads, in pounds, will increase. The expansion will create a larger treatment facility at the site. It may produce additional odor problems due to increased amounts of sewage being treated, air pollution from future sludge incineration, and a possible zone of degradation in Indian Creek below the plant site.

4. Alternatives: Alternatives have been considered from cost effectiveness, environmental effects and other considerations. Feasible alternatives include:

a. Advanced wastewater treatment of secondary effluent and discharge to the stream.

b. Exportation of treated secondary effluent from the basin for discharge into Turkey Creek.

c. Exportation of raw wastes from the basin to a proposed Mill Creek plant for treatment and disposal.

d. Discharge of dry weather raw wastes to the Kansas City, Missouri interceptor system with treatment at their Blue River Plant. Treatment of wet weather flows at the present site for discharge into the stream.

e. Exportation of raw wastes from Upper and Middle Indian Creek basins to a proposed Mill Creek plant for treatment and disposal. Advanced wastewater treatment at the present site of dry weather wastes from Tomahawk and Lower Indian Creek Basins with discharge to Indian Creek.

f. Exportation of raw wastes from Upper and Middle Indian Creek basins to a proposed Mill Creek plant for treatment and discharge. Exportation of treated secondary effluent from the Tomahawk and Lower Indian Creek basins for discharge into Turkey Creek.

g. Exportation of raw wastes from Upper and Middle Indian Creek basins to a proposed Mill Creek plant for treatment and discharge. Exportation of dry weather flows from the Lower Indian Creek and Tomahawk Creek basins to the Blue River treatment plant. Treatment of wet weather flows at the present site for discharge into the stream.

In addition, the alternative of no additional treatment facilities was judged unacceptable from an environmental standpoint because of the undesirability of numerous small publicly or privately owned treatment plants or septic tanks resulting in bad odors in many residential areas and multiple waste discharge points upstream on Indian and Tomahawk Creeks.

On the basis of a twenty year, six percent present worth analysis Plan A is the most cost-effective. Plan E is the second most cost-effective and Plan C the least cost-effective. From an environmental consideration, Plan D has the least effect; Plans A and G have slightly greater effects and Plan E has the greatest effect.

5. Agencies from which Comments haven been Solicited: The following Federal, state and local governmental agencies, members of Congress, and private organizations were invited to comment on the draft statement:

* U.S. Department of the Interior
* U.S. Department of Agriculture
* U.S. Soil Conservation Service - Kansas
* U.S. Soil Conservation Service - Missouri
* U.S. Department of Housing & Urban Development
U.S. Department of Health, Education & Welfare
* U.S. Army Corps of Engineers
* General Services Administration
Office of Management and Budget
Water Resources Council
Federal Highway Administration

* Federal Aviation Administration
* Missouri Department of Community Affairs (A-95 coordinator)
Missouri Clean Water Commission
* Kansas Department of Administration (A-95 coordinator)
Kansas State Department of Health
* Johnson County Board of Commissioners
Jackson County Legislature
* Johnson County Main Sewer District
* Mayor, City of Kansas City, Missouri
* Mayor, City of Leawood, Kansas
Mayor, City of Lenexa, Kansas
Mayor, City of Olathe, Kansas
Mayor, City of Overland Park, Kansas
Mayor, City of Merriam, Kansas
Mayor, City of Shawnee, Kansas
U.S. Senator Bob Dole
U.S. Senator James Pearson
U.S. Senator Stuart Symington
U.S. Senator Thomas Eagleton
U.S. Representative Larry Winn, Jr.
U.S. Representative Richard Bolling
U.S. Representative William Randall
* Mid-America Regional Council
League of Women Voters of Kansas City
Citizens Environmental Council
Johnson County Branch Homebuilders Association

*Agencies and organizations which commented on the draft EIS.

The following agencies and private organizations also commented on the draft statement:

Johnson County Health Department
Black & Veatch Consulting Engineers
Kansas State Historical Society
Johnson County League of Women Voters

6. Publishing Date. The Draft EIS was submitted to the Council on Environmental Quality on July 28, 1972. Proposed date for submission of the Final Impact Statement is April 2, 1974 .

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I. BACKGROUND

A. Introduction

This Environmental Impact Statement (EIS) has been prepared pursuant to the National Environmental Policy Act (NEPA) of 1969, which directs the responsible Federal agency to develop Environmental Impact Statements in accordance with guidelines set forth by the President's Council on Environmental Quality (CEQ) on all major actions which have a significant impact on the quality of the human environment.

Under the statutory authority of the Federal Water Pollution Control Act Amendments of 1972, the U.S. Environmental Protection Agency (EPA) is charged with administering Federal financial assistance for the construction of publicly owned wastewater treatment facilities and their appurtenances. The Environmental Protection Agency will also issue permits to municipal governments to allow the discharge of treated wastewater effluent into navigable waters in such a manner as to protect the health and welfare of the public and the environment. The 1972 Act established a national goal of eliminating the discharge of pollutants by 1985. In addition, "that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water be achieved by July 1, 1983."

For purposes of this Environmental Impact Statement, the Environmental Protection Agency, Region VII, Kansas City, Missouri, is the "Responsible Federal Agency" as required by the National Environmental Policy Act.

This Environmental Impact Statement is based on currently available data and information. It is intended to determine methods of wastewater management with maximum beneficial environmental impacts consistent with water quality goals and cost effectiveness.

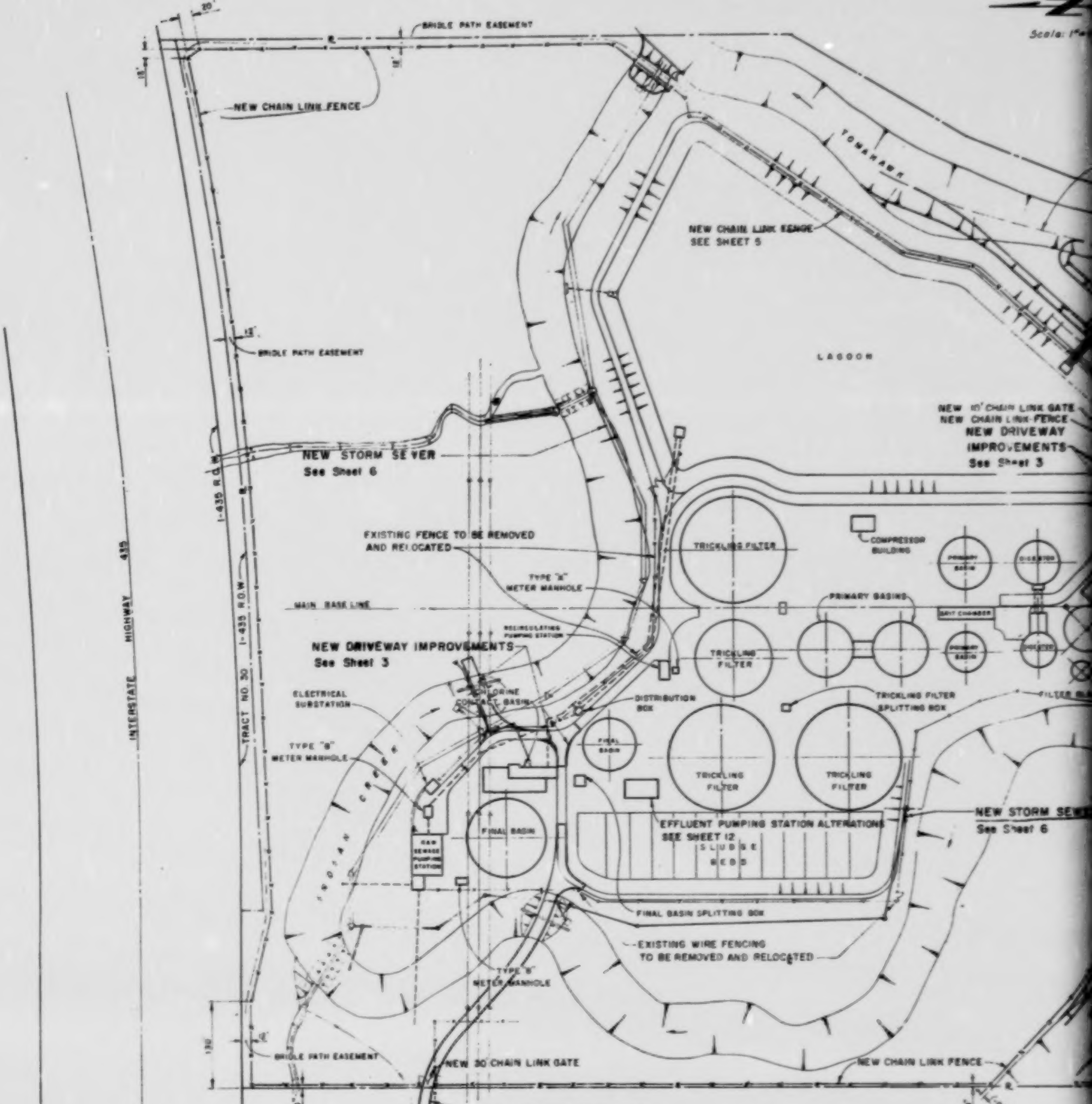
Regardless of prevailing statutory or regulatory actions and impositions on wastewater treatment and disposal, the National Environmental Policy Act mandates a full disclosure of all reasonable alternatives and their identifiable environmental impacts. Alternatives for waste disposal methods discussed in this Environmental Impact Statement may fall outside the implicit regulatory and enforcement authority of the Environmental Protection Agency.

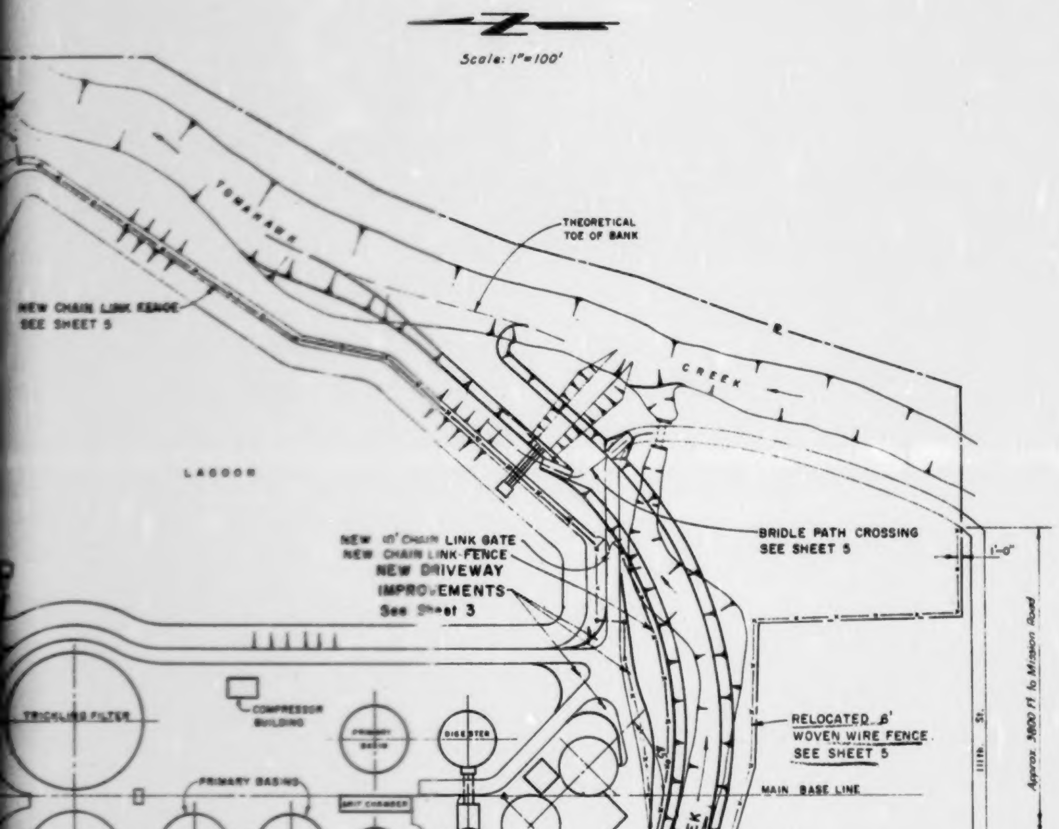
B. Proposed Action

1. Project Description

The Indian Creek Main Sewer District No. 1 is part of the Johnson County, Kansas Main Sewer District which includes several other smaller districts. As proposed in the application, Environmental Protection Agency Project No. C200381 will provide for the relocation of the Indian Creek channel, a new access driveway from Mission Road, an intercepting storm sewer in and along the abandoned creek bed, perimeter fencing of the plant site, landscaping, pipe alterations and appurtenant work (Figure 1, Page I-3).

The proposed project is a preliminary phase in the expansion of the existing 7 mgd (million gallons per day) trickling filter plant serving a population equivalent (PE) of 70,000 to 11 mgd (110,000 PE) to


20'
BRIDLE PATH EASEMENT
18'
NEW CHAIN LINK FENCE
TOMAHAWK
NEW CHAIN LINK FENCE
SEE SHEET 5
LAGOON
Scale: 1"=
12'
BRIDLE PATH EASEMENT
NEW 10' CHAIN LINK GATE
NEW CHAIN LINK FENCE
NEW DRIVEWAY
IMPROVEMENTS
See Sheet 3
NEW STORM SEWER
See Sheet 6
I-435 R.O.W.
INTERSTATE HIGHWAY 435
TRACT NO 30
I-435 R.O.W.
EXISTING FENCE TO BE REMOVED
AND RELOCATED
TRICKLING FILTER
COMPRESSOR BUILDING
PRIMARY BASIN
DIGESTER
TYPE "A" METER MANHOLE
MAIN BASE LINE
PRIMARY BASINS
GRIT CHAMBER
RECIRCULATING PUMPING STATION
NEW DRIVEWAY IMPROVEMENTS
See Sheet 3
TRICKLING FILTER
PRIMARY BASIN
DIGESTER
ELECTRICAL SUBSTATION
CHLORINE CONTACT BASIN
DISTRIBUTION BOX
TRICKLING FILTER SPLITTING BOX
FILTER BL
TYPE "B" METER MANHOLE
INDIAN CREEK
FINAL BASIN
TRICKLING FILTER
TRICKLING FILTER
NEW STORM SEW
See Sheet 6
FINAL BASIN
RAW SEWAGE PUMPING STATION
EFFLUENT PUMPING STATION ALTERATIONS
SEE SHEET 12
SLUDGE BEDS
FINAL BASIN SPLITTING BOX
EXISTING WIRE FENCING
TO BE REMOVED AND RELOCATED
TYPE "B" METER MANHOLE
130'
12'
BRIDLE PATH EASEMENT
NEW 30' CHAIN LINK GATE
NEW CHAIN LINK FENCE
1'-0"
1'-0"
10'
NEW ACCESS DRIVEWAY
TO MISSION ROAD
See Sheet 2


Scale: 1"=100'
TOMAHAWK
CREEK
THEORETICAL TOE OF BANK
NEW CHAIN LINK FENCE SEE SHEET 5
LAGOON
NEW 10' CHAIN LINK GATE
NEW CHAIN LINK FENCE
NEW DRIVEWAY IMPROVEMENTS See Sheet 3
BRIDLE PATH CROSSING SEE SHEET 5
1'-0"
111th St.
Approx. 3800 Ft to Mission Road
TRICKLING FILTER
COMPRESSOR BUILDING
PRIMARY BASIN
DIGESTER
PRIMARY BASINS
GRIT CHAMBER
RELOCATED 6' WOVEN WIRE FENCE SEE SHEET 5
MAIN BASE LINE
TRICKLING FILTER SPLITTING BOX
FILTER BLDG.
NEW STORM SEWER See Sheet 6
SLUDGE BEDS
SPLITTING BOX
WIRE FENCING REMOVED AND RELOCATED
NEW CHANNEL INDIAN CREEK
RELOCATED 6' WOVEN WIRE FENCE
NEW CHAIN LINK FENCE
10'
6'

CONTRACT 11

JOHNSON COUNTY, KANSAS
INDIAN CREEK MAIN SEWER DISTRICT NO. 1

SEWAGE TREATMENT PLANT SITEWORK
SITE PLAN

FIGURE 1

meet the additional needs of the Lower Indian Creek Basin. It is also expected that additional treatment plants with total ultimate capacity for 428,000 PE will be built at the present site to treat wastes from the Upper and Middle Indian Creek Basins and the Tomahawk Creek Basins.

2. Financial Information

An application for financial assistance (Project No. C200381) was received on June 21, 1971. Total estimated project cost is $673,800. The grant from the Federal Environmental Protection Agency is $370,590, 55% of the total cost; from the Kansas State Department of Health, $168,450, or 25%; and from local sources, $134,760, or 20% of the total cost.

C. Social and Environmental Setting

1. General Population Trends

Johnson County, the second most populated county in the State of Kansas, is located in the southwestern section of the Kansas City metropolitan area. Population trends since 1950 show that the urbanization of northeast Johnson County has occurred at a rapid rate. Early expansion near the Kansas-Missouri state line has been to the west and south. The extensive urban outgrowth now extends more than eight miles west of the state line and ten miles south of the north Johnson County line. A list of incorporated cities and recent population figures obtained from the Johnson County Assessor's Office is given in Table I, Page I-5. The census figures in 1960 show a population of 143,792 for the county or an increase of about 130% over the 1950 population of

TABLE I

POPULATION DATA FOR JOHNSON COUNTY KANSAS

	U.S. Census			Assessor's Count
	1950	1960	1970	January 1, 1973
Johnson County	62,783	143,792	220,073	236,214
Incorporated Cities				
Countryside (Incorporated 1951)	-	-	403	419
DeSoto	518	1,271	1,839	1,925
Edgerton	266	414	513	464
Fairway	1,816	5,398	5,133	5,178
Gardner	676	1,619	1,839	1,891
Leawood	1,167	7,466	10,349	11,864
Lenexa	803	2,487	5,242	8,419
Merriam (Incorporated 1950)	-	5,084	10,851	10,964
Mission (Incorporated 1951)	-	4,626	8,376	8,656
Mission Hills	1,275	3,621	4,177	4,298
Mission Woods	205	243	242	241
Olathe	5,593	10,987	17,917	20,283
Overland Park (Incorporated 1960)	-	21,110	79,034	82,729
Prairie Village (Incorporated 1951)	-	25,356	28,138	29,099
Quivera	-	-	-	975
Roeland Park (Incorporated 1951)	-	8,949	9,974	9,406
Shawnee	845	9,072	20,482	23,347
Spring Hill	619	909	1,186	1,394
Westwood	1,581	2,040	2,329	2,256
Westwood Hills	431	495	414	504

62,783. During the 1960-1970 decade, the population increased 50% to 220,073. The population has increased about 8%, to 236,214, as of January 1, 1973. According to "Estimates and Projections, Regional Plan A, 1973" Mid-America Regional Council (MARC), an increase to about 377,400 persons is projected by the year 2000. Within the county there are twenty incorporated cities shown in Table I, Page I-5. The data indicates the rate of increase for the northeast part of the county is greater than for the county as a whole.

2. Land Use

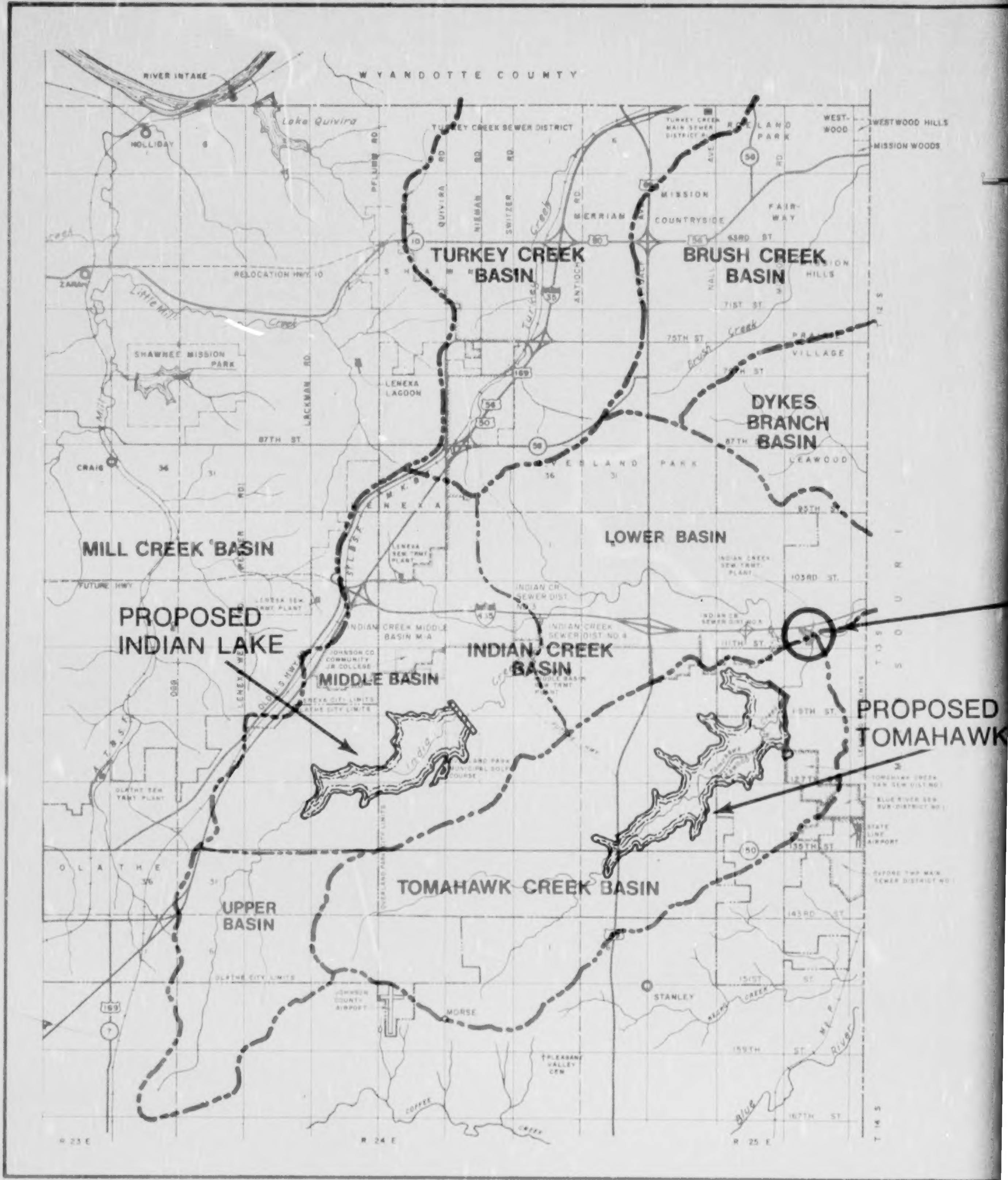
a. Present

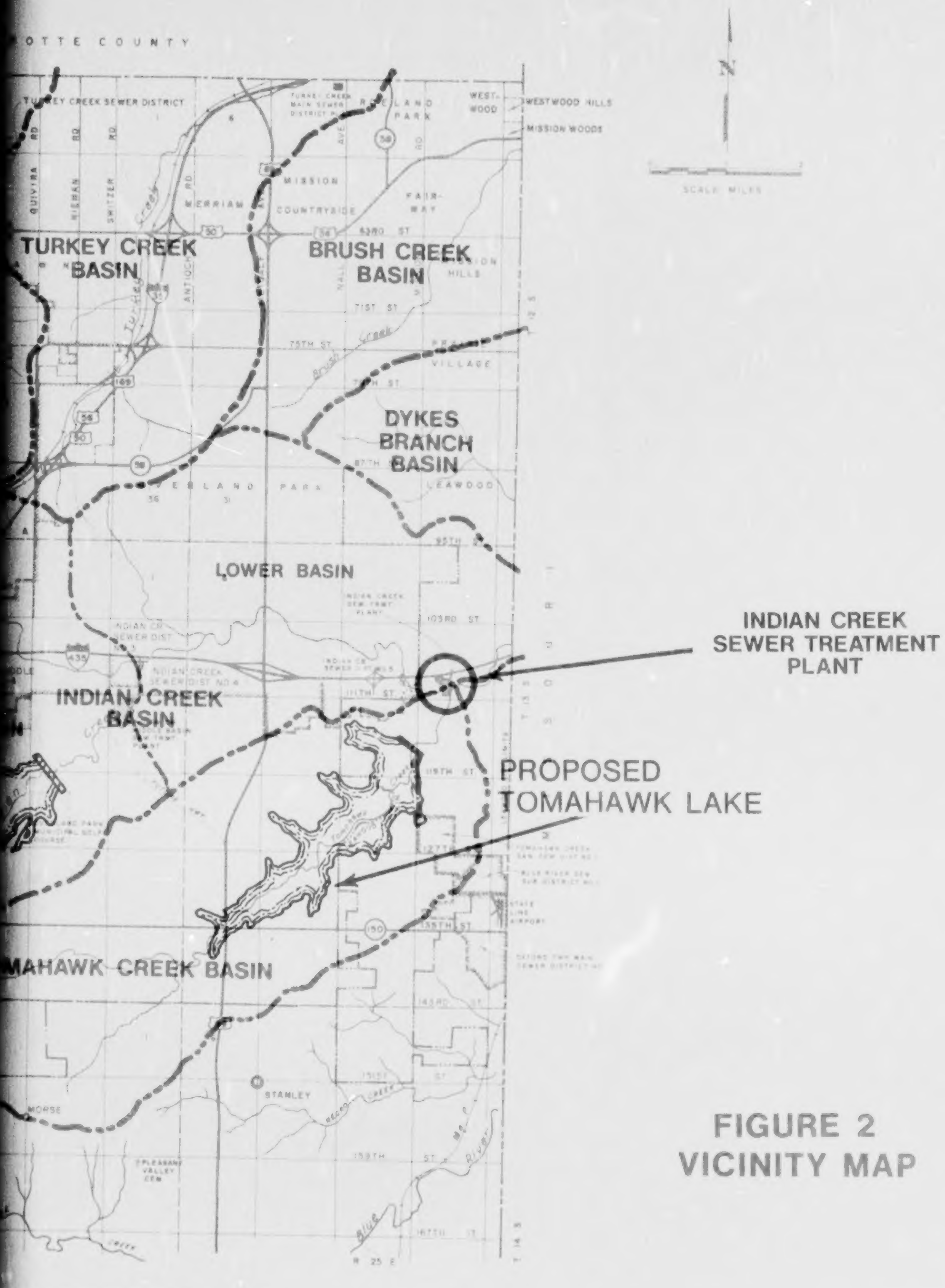
Present land use in Johnson County is agricultural, commercial, industrial, and residential. Major economic activities are agriculture and commercial enterprises ranging from light to heavy industries.

(1) Surface Water. Bodies of water located within county boundaries are used for public water supplies (Kansas River), industrial water supplies, recreation sport fishing, agricultural purposes and receipt of wastes.

(2) General. Figure 2, Page I-7 shows the major geographic features, political boundaries and drainage basins in the northeast portion of Johnson County.

Major drainage basins in the county include Mill Creek, Turkey Creek, Brush Creek, Tomahawk Creek, Dykes Branch and Indian Creek (Upper, Middle and Lower sections). Indian Creek Main Sewer District No. 1 is a sub-district of the Lower Indian Creek Basin. The Indian Creek Waste Treatment Plant is located at 108th and Mission Road, about one mile upstream from the Kansas-Missouri state line. Except for Tomahawk Creek


WYANDOTTE COUNTY
RIVER INTAKE
Lake Quivira
HOLLIDAY
TURKEY CREEK SEWER DISTRICT
TURKEY CREEK MAIN SEWER DISTRICT
ROELAND PARK
WESTWOOD
WESTWOOD HILLS
MISSION WOODS
MISSION
MERRIAM
COUNTRYSIDE
FAIRWAY
63RD ST
TURKEY CREEK BASIN
BRUSH CREEK BASIN
MISSION HILLS
RELOCATION HWY 10
ZARAH
Little Mill Creek
SHAWNEE MISSION PARK
71ST ST
75TH ST
Brush Creek
PRAIRIE VILLAGE
LENEXA LAGOON
DYKES BRANCH BASIN
87TH ST
CRAIG
OVERLAND PARK
LEAWOOD
95TH ST
MILL CREEK BASIN
LOWER BASIN
LENEXA SEW TRMT PLANT
INDIAN CREEK SEW TRMT PLANT
103RD ST
FUTURE HWY
INDIAN CR SEWER DIST NO 3
INDIAN CREEK SEWER DIST NO 4
INDIAN CREEK MIDDLE BASIN M-A
PROPOSED INDIAN LAKE
JOHNSON CO COMMUNITY JR COLLEGE
INDIAN CREEK BASIN
MIDDLE BASIN
111TH ST
119TH ST
PROPOSED TOMAHAWK
OLATHE SEW TRMT PLANT
OVERLAND PARK MUNICIPAL GOLF COURSE
TOMAHAWK CREEK SAN SEW DIST NO 1
BLUE RIVER SEW SUB-DISTRICT NO 1
127TH ST
STATE LINE AIRPORT
135TH ST
OLATHE
TOMAHAWK CREEK BASIN
UPPER BASIN
143RD ST
OLATHE CITY LIMITS
JOHNSON COUNTY AIRPORT
151ST ST
STANLEY
MORSE
159TH ST
PLEASANT VALLEY CEM
Coffee Creek
Blue River
167TH ST
R 23 E
R 24 E
R 25 E
T 14 S
MISSOURI



N
SCALE: MILES
OTTE COUNTY
TURKEY CREEK SEWER DISTRICT
TURKEY CREEK MAIN SEWER DISTRICT
ROELAND PARK
WESTWOOD
WESTWOOD HILLS
MISSION WOODS
QUIVIRA RD
NIEMAN RD
SWITZER RD
MERRIAM
MISSION
COUNTRYSIDE
FAIRWAY
63RD ST
MISSION HILLS
TURKEY CREEK BASIN
BRUSH CREEK BASIN
Turkey Creek
Brush Creek
71ST ST
75TH ST
PRAIRIE VILLAGE
DYKES BRANCH BASIN
87TH
LEAWOOD
OVERLAND PARK
95TH
LOWER BASIN
INDIAN CREEK SEW. TRMT PLANT
103RD ST
INDIAN CR SEWER DIST
INDIAN CREEK SEWER DIST NO 4
111TH ST
INDIAN CREEK BASIN
INDIAN CREEK SEWER TREATMENT PLANT
119TH ST
PROPOSED TOMAHAWK LAKE
127TH
TOMAHAWK CREEK SAN SEW DIST NO 1
BLUE RIVER SEW SUB DISTRICT NO 1
STATE LINE AIRPORT
135TH ST
OXFORD TWP MAIN SEWER DISTRICT NO
TOMAHAWK CREEK BASIN
143RD ST
151ST ST
STANLEY
MORSE
159TH ST
PLEASANT VALLEY CEM
Blue River
167TH ST
R 25 E
T 14 S
T 13 S
T 12 S
MISSOURI

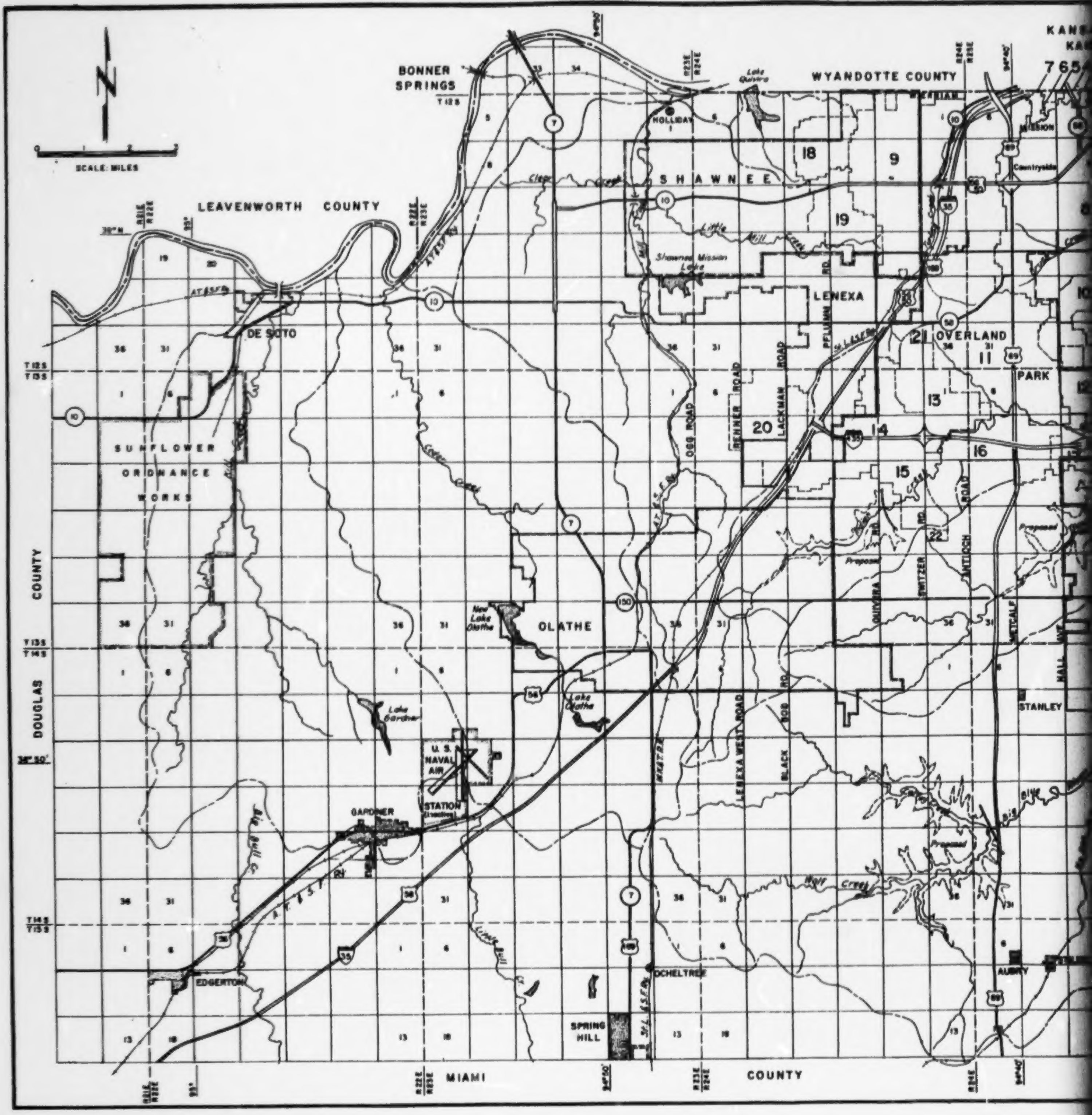
FIGURE 2
VICINITY MAP

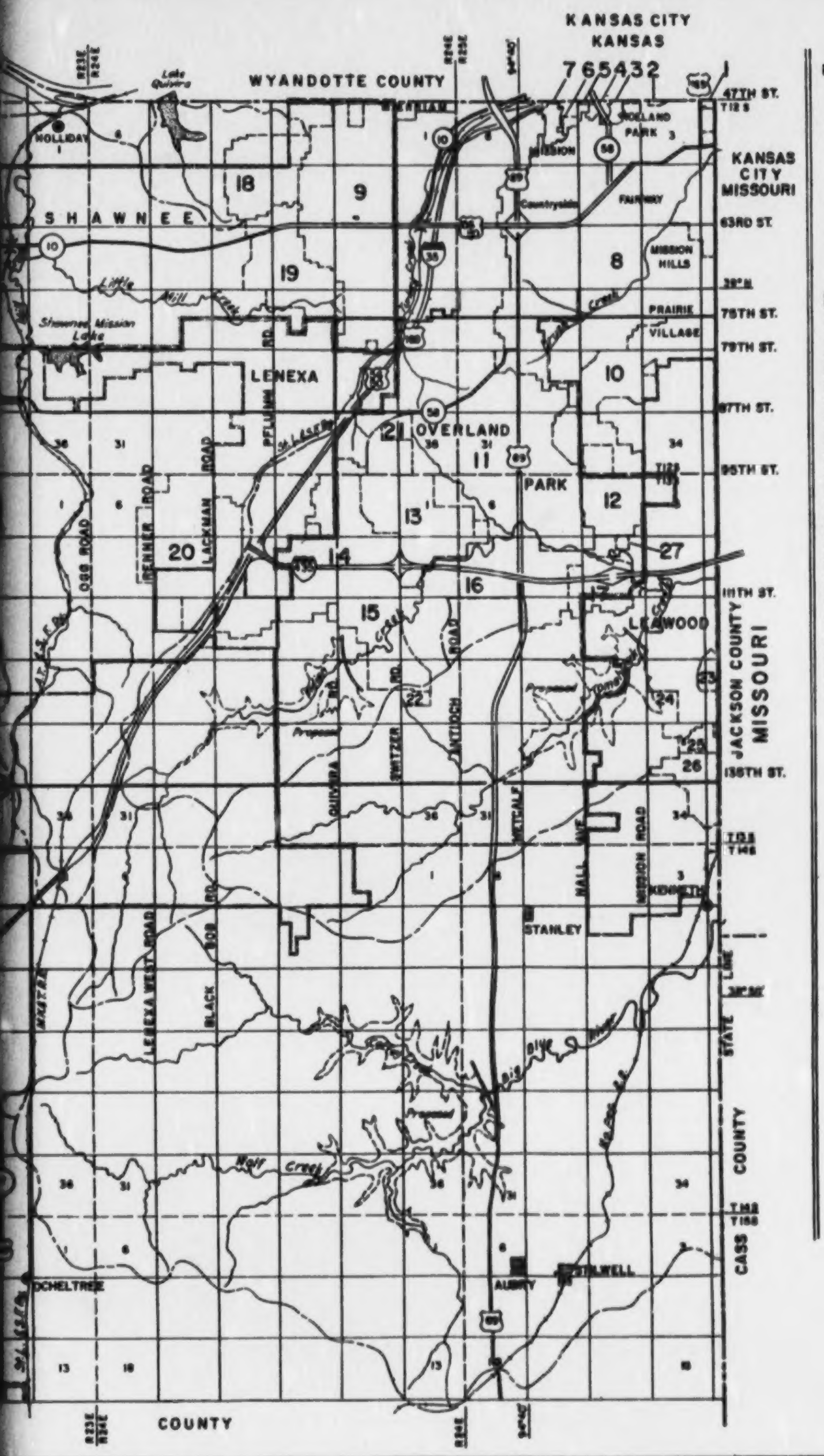
Basin, sewer services are now provided to the extensive residential and commercial development areas in all basins. Settlement in the Mill Creek, Tomahawk, Upper and Middle Indian Creek watersheds is sparse and buildings are served mainly by individual private systems. Figure 3, Page I-9 is a map of the sewered areas in Johnson County.

(3) Plant Site. Figure 4, Page I-10 shows present land uses around the existing plant. The site is bordered on the north by Interstate Highway 435, and to the east there are agricultural and recreational areas. Immediately south and west of the plant site the land is in agricultural use. Stables for horses and bridle paths occupy a portion of the land adjacent to the existing treatment facilities. Legally dedicated bridle paths cross the plant site. Areas farther to the north, east and southeast are primarily residential, consisting of duplexes, single family dwellings, townhouses, and apartments. Although extensive development has occurred in these areas, vacant land is still available for future use. Nearly all residential development in the immediate area is of recent construction.

b. Projected

(1) Surface Water [1] The Corps of Engineers is proposing the construction of Tomahawk and Indian Lakes in the Tomahawk Creek and Middle Indian Creek Basins, respectively (Figure 2, Page I-7). In addition to these lakes another lake, Wolf-Coffee located on Wolf Creek (Figure 3, Page I-9) is also proposed. The Corps of Engineers is presently in the process of land acquisition for these projects although it is not certain at this time whether they will be constructed. These


SCALE: MILES
LEAVENWORTH COUNTY
BONNER SPRINGS
WYANDOTTE COUNTY
SHAWNEE
Lake Quivira
HOLLIDAY
Clear Creek
Little Mill Creek
Shawnee Mission Lake
LENEXA
OVERLAND PARK
MISSION
Countryside
DE SOTO
SUNFLOWER ORDNANCE WORKS
DOUGLAS COUNTY
OLATHE
New Lake Olathe
Lake Olathe
Lake Gardner
U. S. NAVAL AIR STATION
GARDNER
EDGERTON
SPRING HILL
OCHELTREE
STANLEY
AUBRY
MIAMI COUNTY
Big Bull Cr.
Little Bull Cr.
Cedar Creek
Wolf Creek
Blue River
Proposed
OGG ROAD
RENNER ROAD
LACKMAN ROAD
PFLUMM RD
QUIVIRA RD
SWITZER RD
ANTIOCH ROAD
LENEXA WEST ROAD
BLACK BOB RD
METCALF
HALL AVE
A.T.&S.F.RY.
St.L.&S.F.RY.
T12S
T13S
T14S
T15S
R21E
R22E
R23E
R24E
R25E
39° N
38°50'
94°50'
94°40'
95°
KANS
7 6 5
18
9
19
20
14
21
11
13
15
16
22
10
12
8
7
10
10
56
50
69
35
150
169
435


KANSAS CITY
KANSAS
7 6 5 4 3 2 1
WYANDOTTE COUNTY
Lake Quivira
HOLLIDAY
SHAWNEE
18
9
19
8
10
11
12
13
14
15
16
20
21
22
24
25
26
27
Shawnee Mission Lake
LENEXA
OVERLAND
PARK
MISSION
ROELAND PARK
Countryside
FAIRWAY
MISSION HILLS
PRAIRIE VILLAGE
LEAWOOD
KANSAS CITY MISSOURI
47TH ST.
63RD ST.
75TH ST.
79TH ST.
87TH ST.
95TH ST.
111TH ST.
135TH ST.
JACKSON COUNTY
MISSOURI
STATE LINE
CASS COUNTY
Little Mill Creek
Big Blue River
Wolf Creek
Proposed
OGG ROAD
RENNER ROAD
LACKMAN ROAD
PFLUMM RD.
QUIVIRA RD.
SWITZER RD.
ANTIOCH ROAD
METCALF
NALL AVE.
MISSION ROAD
LENEXA WEST ROAD
BLACK BOB RD.
KENNETH
STANLEY
OCHELTREE
AUBRY
STILWELL
COUNTY
R23E
R24E
R25E
T12S
T13S
T14S
T15S
T16S
39°N
38°50'
94°40'

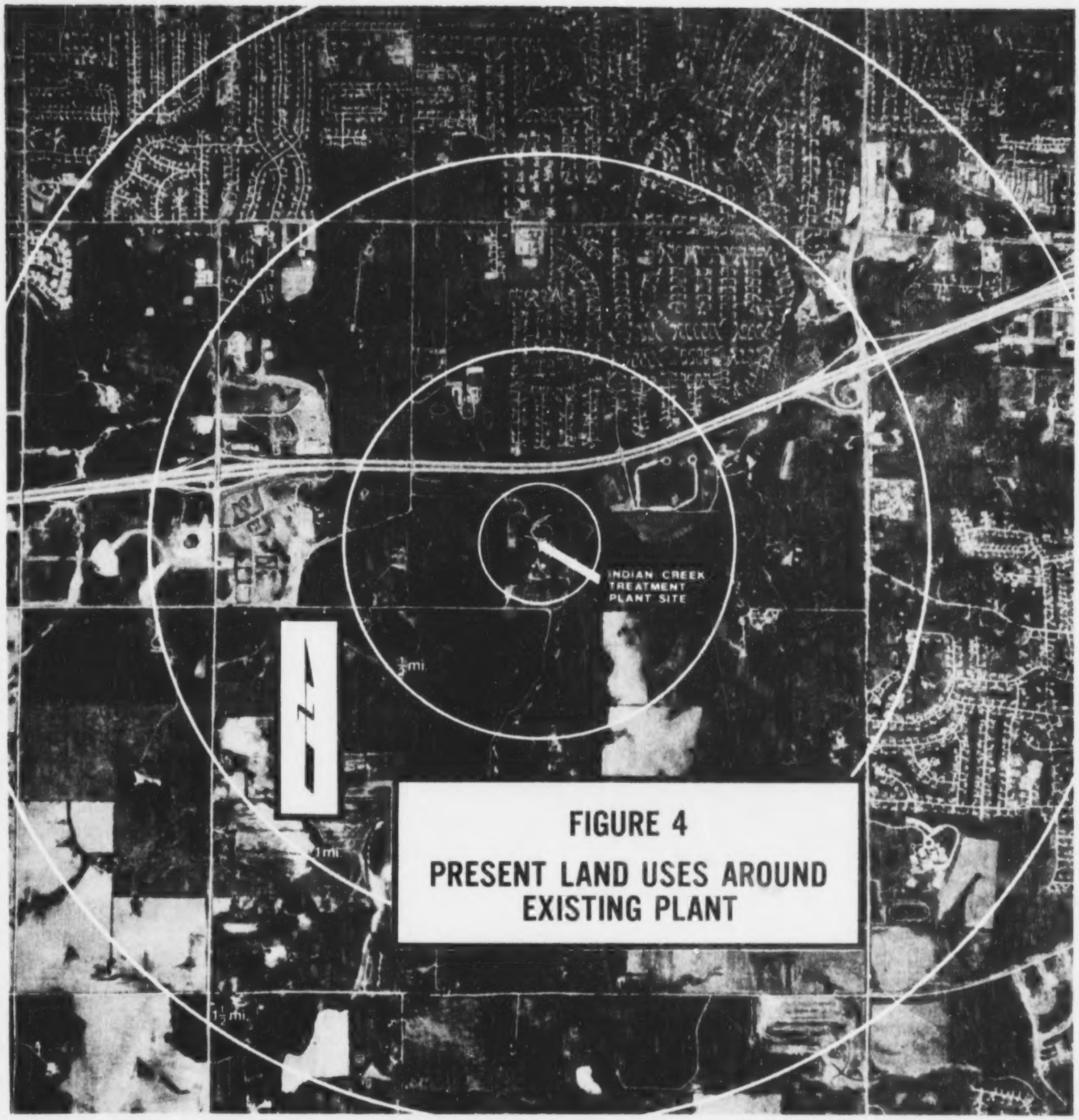
NO.	NAME
1	WESTPORT ANNEX SEWER DISTRICT NO. 1
2	ROELAND PARK SEWER SUB-DISTRICT NO. 3
3	ROELAND PARK SEWER SUB-DISTRICT NO. 2
4	ROELAND PARK SEWER SUB-DISTRICT NO. 1
5	ROELAND PARK SEWER SUB-DISTRICT NO. 4
6	WALNUT VIEW
7	MISSION SEWER SUB-DISTRICT NO. 1
8	MISSION TOWNSHIP MAIN SEWER DISTRICT NO. 1
9	SHAWNEE & MISSION TOWNSHIPS TURKEY CREEK MAIN SEWER DISTRICT NO. 1
10	DYKE'S BRANCH JOINT SEWER DISTRICT "A"
11	INDIAN CREEK SEWER SUB-DISTRICT NO. 1
12	INDIAN CREEK SEWER SUB-DISTRICT NO. 2
13	INDIAN CREEK SEWER SUB-DISTRICT NO. 3
14	INDIAN CREEK MIDDLE BASIN SEWER SUB-DISTRICT NO. M-A
15	INDIAN CREEK MIDDLE BASIN SEWER SUB-DISTRICT NO. M-B
16	INDIAN CREEK SEWER SUB-DISTRICT NO. 4
17	INDIAN CREEK SEWER SUB-DISTRICT NO. 5
18	TOOLEY CREEK MAIN SEWER DISTRICT NO. 1
19	LITTLE MILL CREEK NORTH SEWER SUB-DISTRICT NO. 1
20	MILL CREEK SEWER SUB-DISTRICT NO. 1 (LENEXA)
21	WESTBROOKE SEWER DISTRICT NO. 1
22	TOMAHAWK CREEK SEWER SUB-DISTRICT NO. 2
23	STATE LINE (121ST. STREET) MAIN SEWER DISTRICT NO. 1
24	TOMAHAWK CREEK SEWER SUB-DISTRICT NO. 1.
25	BLUE RIVER SEWER SUB-DISTRICT NO. 1
26	OXFORD TOWNSHIP MAIN SEWER DISTRICT NO. 1
27	WYCKLOW SUB SEWER DISTRICT

FIGURE 3

JOHNSON COUNTY, KANSAS

SEWER DISTRICT MAP

BLACK & VEATCH
CONSULTING ENGINEERS
KANSAS CITY, MISSOURI
1972



INDIAN CREEK
TREATMENT
PLANT SITE
½ mi.
1 mi.
1½ mi.
N

FIGURE 4

PRESENT LAND USES AROUND EXISTING PLANT

Lakes are a part of the Blue River Flood Control Project as authorized by the Flood Control Act of 1970 (P.L. 91-611). These lake facilities will control approximately 46 percent of the Blue River Watershed above the U.S. Geological survey gage 4 miles downstream from Indian Creek. With construction of the proposed lakes, land available for residential and commercial development would be reduced by 2,300 acres from 15,200 acres in the Tomahawk Creek Basin and 2,200 acres from 11,200 acres in the Middle Indian Creek Basin. The present population of Tomahawk Creek Basin is approximately 2,000. An ultimate population of 140,000 with the construction of the lake, or 160,000 without the lake, is expected (Table 2, Page I-12). An ultimate population of 154,000 persons is anticipated for the Middle and Upper Indian Creek Basins combined (Table 2). Present population in these basins is estimated at 2,000.

(2) General. A Regional Comprehensive Plan for the Greater Kansas City Area, developed by the Mid-America Regional Council (MARC), indicates that future land use in the Tomahawk Creek and Indian Creek Basins will be mainly low, medium, and high density residential, with parks and conservation areas surrounding the proposed lakes. Some areas, however will have other uses. Large tracts of land in Lenexa and Olathe, in the vicinity of I-35 to the southwest, already accommodate industrial and commercial development. Two examples of

TABLE 2

ULTIMATE DESIGN POPULATION AND FLOWS INDIAN CREEK AND TOMAHAWK CREEK BASINS (2)

Area	Acres	+Ultimate Population	Flows (mgd) Dry Weather Flow Average (100 gpcd)	Maximum (250 gpcd)	Extraneous Flow (400 gpcd)	Total Wet Weather Flow (650 gpcd - .01 cfs/acre)
Lower Indian Creek Basin	10,000	105,000	10.5	26.2	38.4	64.6
*Dykes Branch Joint Sewer District A	850	8,900	0.9	2.2	8.7	10.9
Middle Indian Creek Basin	11,200	118,000	11.8	29.5	43.0	72.5
Upper Indian Creek Basin	3,440	36,100	3.6	9.0	13.2	22.2
Tomahawk Creek Basin	15,250	160,000	16.0	40.0	58.5	98.5
TOTAL	40,740	428,000	42.8	106.9	161.8	268.7

* May be included as a part of the Lower Indian Creek Basin to be served by ultimate treatment facilities at the plant site.

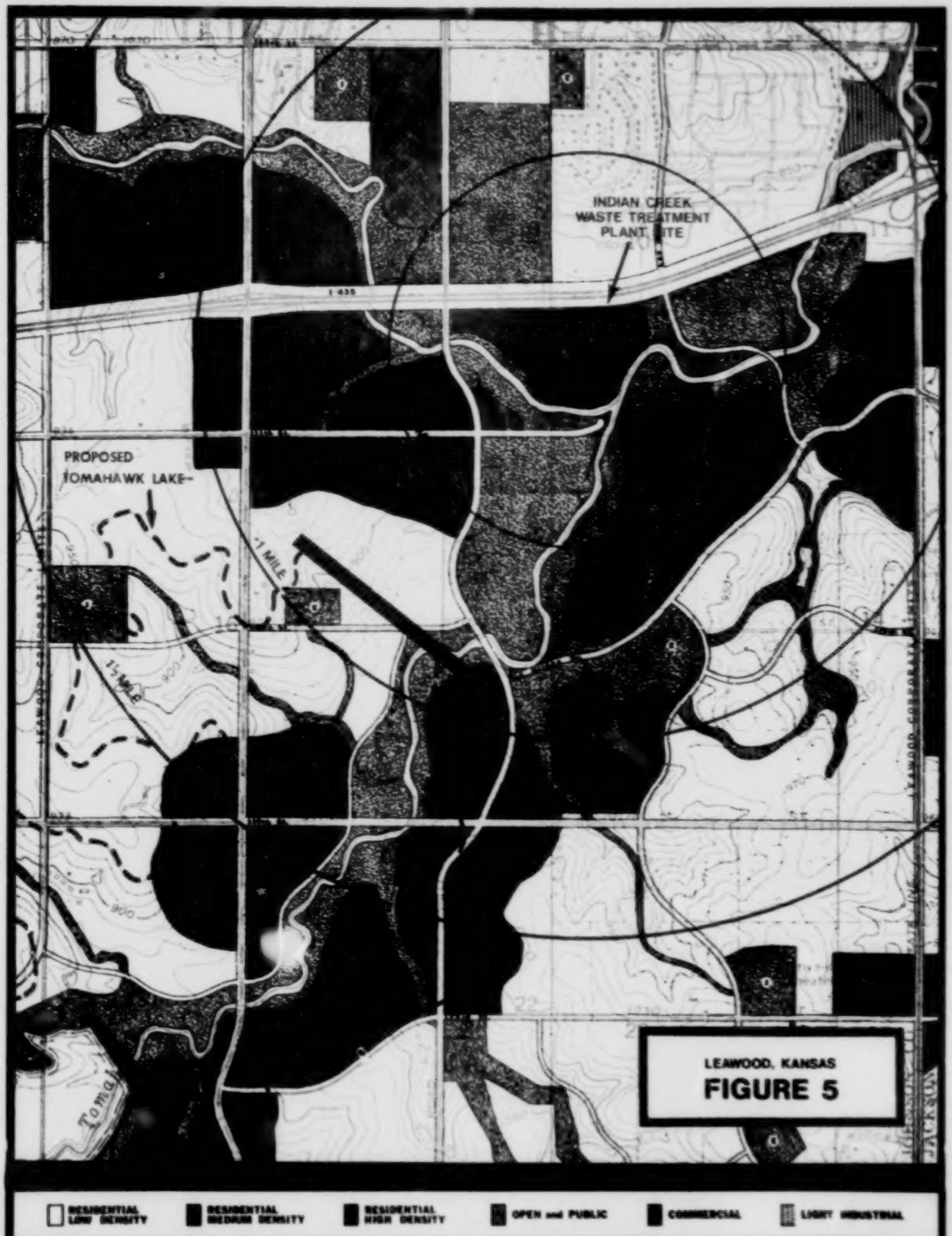
+ Interceptor design criteria for the sewer district is 0.01 cfs/acre or approximately 650 gpcd when an ultimate population density of 10 persons.

proposed development in the Middle Indian Creek Basin include, (1) the first Land Development Company, a 750 acre metropolitan center with hotels, motels, office buildings, medical complexes, apartment towers and shopping areas; and (2) an Extendicare, Inc. hospital with 400 beds. The location of these and other industrial and commercial developments in the Indian Creek and Tomahawk Creek Basins will accelerate the county residential development.

The planned residential growth to the south in the Indian Creek and Tomahawk Creek Basins is consistent with the Greater Kansas City Regional Comprehensive Plan.

A Regional Water and Sewage Report issued in 1970 by MARC plans for the expansion of the Indian Creek treatment facilities. A revised report is expected in 1974, with new recommendations in consideration of the current water quality standards for Kansas.

(3) Plant Site. Projected land uses for the area surrounding the plant are shown in Figure 5, Page I-14. A summary of future land uses within a one-half mile and one mile radius of the center of the plant is shown in Table 3, Page I-15. The location of the proposed Tomahawk Lake is also shown. The land uses indicated are a part of a larger zoning study of the area undertaken by Black & Veatch, a local engineering consulting firm. No specific date for plan achievement is available. The land use plan shows considerable buffering around the plant and southwesterly



INDIAN CREEK WASTE TREATMENT PLANT SITE
I-435
PROPOSED TOMAHAWK LAKE
1 MILE
1½ MILE
850
900
950
970
LEAWOOD CORPORATE LIMITS
JOHNSON
JACKSON
Toma
LEAWOOD, KANSAS
FIGURE 5
RESIDENTIAL LOW DENSITY
RESIDENTIAL MEDIUM DENSITY
RESIDENTIAL HIGH DENSITY
OPEN and PUBLIC
COMMERCIAL
LIGHT INDUSTRIAL
north

LEAWOOD, KANSAS – FUTURE LAND USE

TABLE 3

FUTURE LAND USES AROUND INDIAN CREEK SEWAGE TREATMENT PLANT

	1/2 mile radius (percentage of total area)	1 mile radius (percentage of total area)
Low Density Residential	14	38
Medium Density Residential	6	8
High Density Residential	15	9
Open & Public (schools, parks, roads, undeveloped, etc.)	61	34
Commercial	4	10
Light Industrial	0	1
Total	100	100

across the creek. Open and public lands are to the south and east. The area immediately to the southeast has a steep grade bank that economically precludes its use as a building site.

3. Local Geography

In general, Johnson County has a flat to gently rolling land surface with some steep-walled stream valleys. Figure 6, Page I-17 is a topographical map of a six square mile area around the existing sewage treatment plant. Man-made land alteration features (Figure 2, Page I-7) are Lake Quivira and environs and Shawnee Mission Park and environs, constructed for the preservation and maintenance of rural retreats and water-centered recreational activities.

This area of Kansas has an average annual precipitation of about 36 inches, a higher relative humidity, less sunshine, and less range between day and night temperatures than counties in the western part of Kansas.(3)

4. Plant and animal life

The county is located in the northern section of the Cherokee Prairie and Resource Area. Highly urbanized, it has lost much of the original plant and animal life characteristic of the region. Where natural vegetation is still found, typical mixed eastern hardwood timber is characteristic with oak and hickory mixtures on the uplands and elm, ash, and cottonwood dominating in the lowlands. Land neither urbanized nor forested is used for agricultural purposes with corn, soybean, sorghum and livestock as major crops. Except where otherwise indicated, the

FIGURE 6

TOPOGRAPY of INDIAN CREEK SEWAGE TREATMENT PLANT AREA

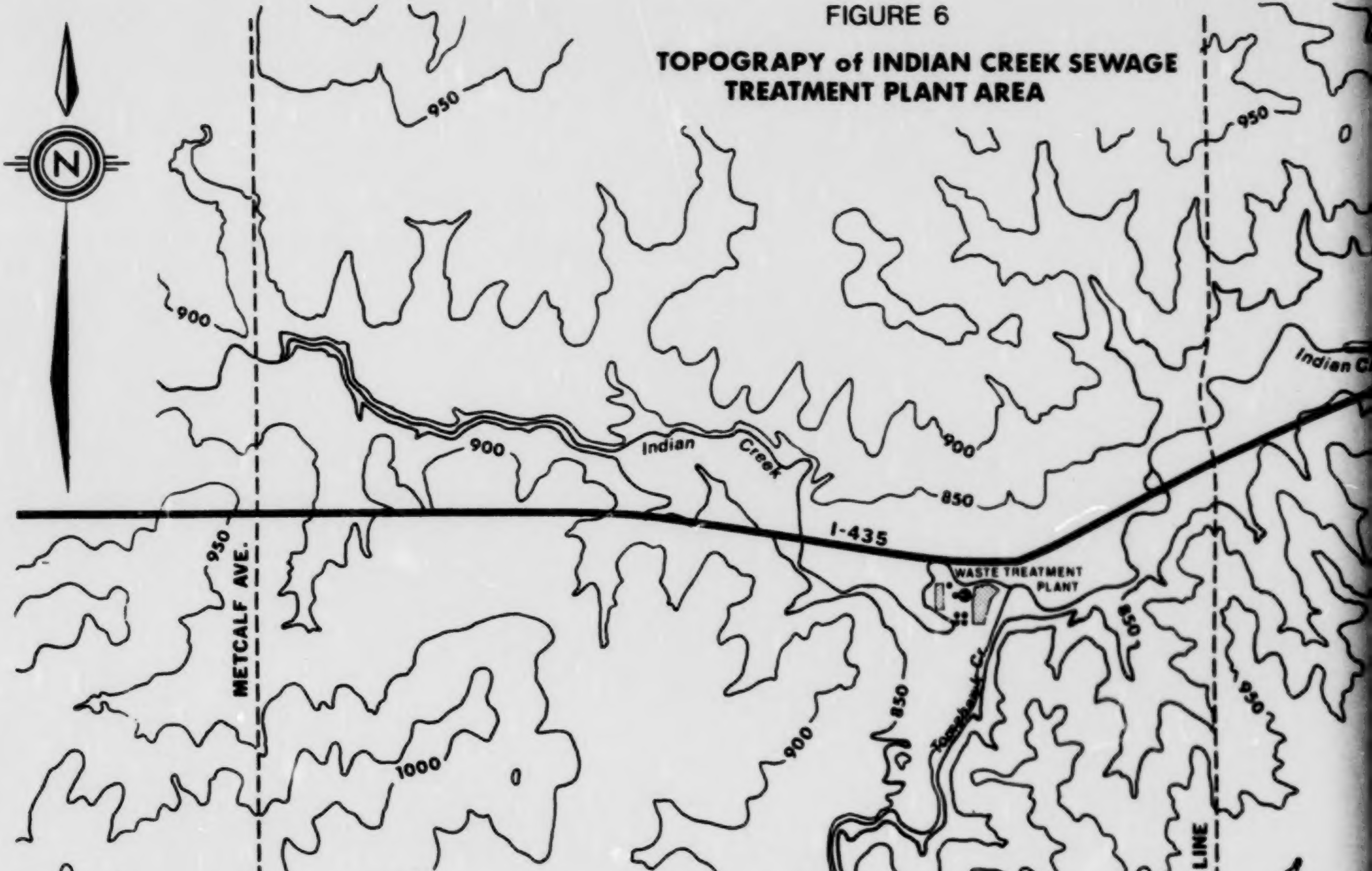
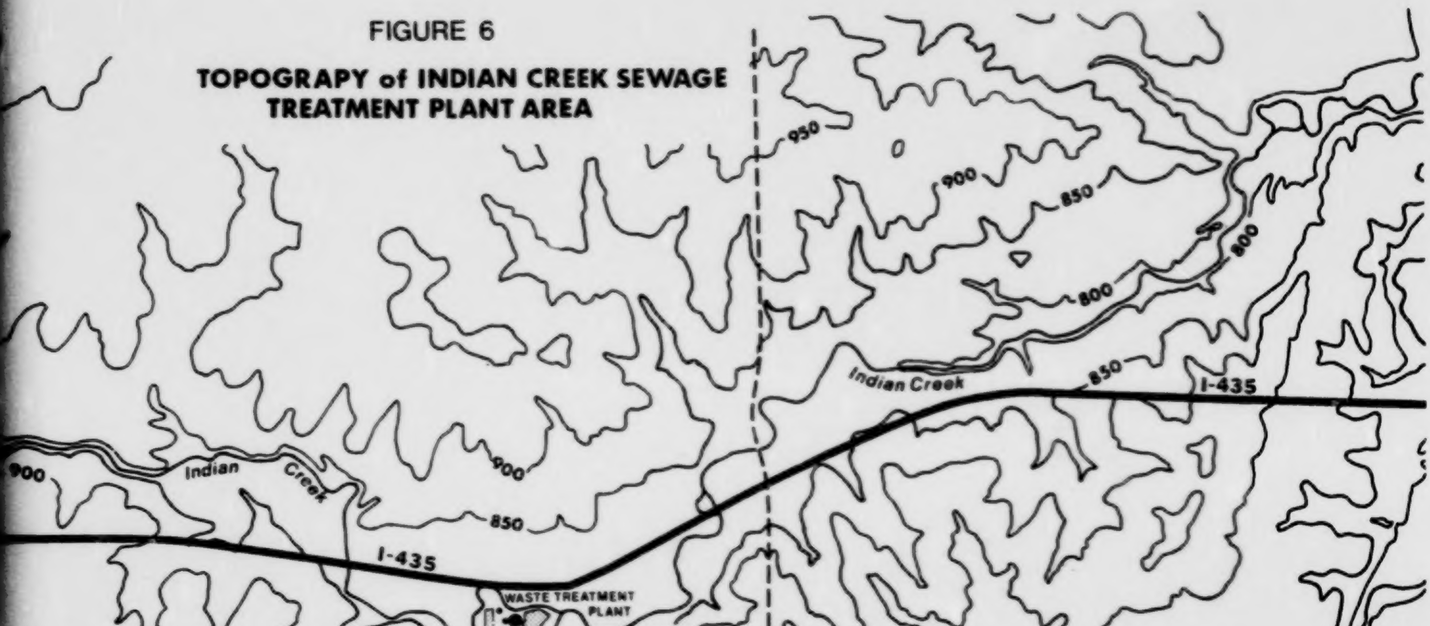

N
950
900
Indian
Creek
850
I-435
METCALF AVE.
WASTE TREATMENT PLANT
1000
Tomahawk Cr.
STATE LINE
Indian C

FIGURE 6

TOPOGRAPY of INDIAN CREEK SEWAGE TREATMENT PLANT AREA


950
900
850
800
800
Indian Creek
850
I-435
900
Indian Creek
900
850
I-435
WASTE TREATMENT PLANT
850
950
950
900
850
850
Tomahawk Cr.
900
850
950
900
STATE LINE
950
900
1000
900
BLUE R.

following information and appended tables on flora and fauna of Johnson County and surrounding areas are taken from Midwest Research Institute's Report for the Kansas City District Corps of Engineers, "Social, Economic and Environmental Assessment of the Blue River Basin, Vicinity of Kansas City, Missouri and Kansas." (4)

Based on a review of pertinent botanical works published in the last 25 years, Johnson County, Kansas, contains some 442 species of plants in the Pteridophyta and Spermatophyta phyla. Five rare or endangered plants are suspected of being in the county and its surrounding area: Putty root orchid (Aplectum hymale), Early coral root orchid, (Corallorhize wisteriana), Yellow lady's slipper orchid (Cypripedium calceolus), Prairie white fringed orchid (Habenaria Leucophaea), and Showy orchid (Orchis spectabilis). The yellow lady's slipper orchid is on the federal rare and endangered species list. The remaining 4 plants are species that will be found at only a few sites in Kansas because Kansas is peripheral to their range.

Certain natural successional changes will occur during the next 50 years but these changes will be overshadowed by the expected growth and development of urban areas for residences, commerce and industry. Ultimately, man will gain full control of the land resources and the natural processes of selection and succession will be insignificant in determining the future floral resources of the basin.

One species of salamander, nine species of toads and frogs, six species of turtles, six species of lizards, and twenty-five species of snakes are found in the area. Appendix A, Table A-1 lists these species of amphibians and reptiles. The redmilk snake, western smooth green snake, northern green spring peeper, green frog and western massasauga are considered rare but not endangered. In addition, according to the University of Kansas one lizard, the broadheaded skink, is also infrequently found.

Appendix A, Table A-2 is a tentative list of some common species of birds found in the vicinity according to type of habitat. It is estimated that there are a total of 142 resident-migrating birds potentially inhabiting Johnson County and the surrounding area. Of the nine species of birds considered rare in Kansas, the red shouldered hawk, the southern bald eagle, and osprey have been sighted in the area. The northern bald eagle has been sighted frequently near the Blue River Basin (includes Kansas and Missouri) and is not listed as rare or endangered.

Appendix A, Table A-3 lists 52 mammalian species suspected of inhabiting the Blue River Basin. Seven of the 52 species are considered endangered in Missouri. Four of the Missouri endangered species are bats, one of which (Indiana bat) is on the National Endangered Species List. No data are available on the abundance of these four species of bats in the Blue River Basin.

As urbanization of the area will occur, a gradual decline in the numbers of certain wildlife species is bound to result. This will especially be evident in species which are intolerant of man and his urban activities, ie., the river otter, shrews, ospreys, eagles, hawks, jack-rabbits etc. Declines will also occur in species dependent on wild weedy areas, a habitat type not normally maintained in urban areas. One would expect an increase in Norway rats, house mice, starlings, English sparrows and other such wildlife commonly associated with human activities.

Field surveys were conducted in early April 1973 in which fish were collected from 13 sampling stations in the Blue River Basin. Three stations were on Indian Creek and two were on Tomahawk Creek. The results of the survey are presented in Appendix A, Table A-4. Of the 21 species of fish determined during the survey, 14 were found in Indian Creek and 15 were found in Tomahawk Creek.

None of the fishes reported as being collected during the past 25 years from the Blue River Basin is considered rare and/or endangered. Likewise, none of the species of fish collected during the field study is considered rare and/or endangered in either Missouri or Kansas.

Urbanization of the area will have an influence on the fishes of the Blue River drainage. The adverse effects will be minimized if proper zoning and pollution controls exist. However, when organic and inorganic pollution increase, contaminated surface runoff will increase and other urban problems will develop. Then, the quality of the streams will be degraded and cause a coincidental decline in the quality of the Blue River fishery.

5. Geology (5)

There are no significant geologic structures in Johnson County. The slope is about 12 ft/mile towards the northwest. In all parts of the county, with the exception of the river valleys, the rocks are primarily limestone and shale of the Pennsylvanian Age. Limestone is mined for use as a construction material within and around the area. River valleys consist primarily of sand and gravel of the Quaternary Age. Commercial sand and gravel is taken from the Kansas River.

6. Hydrology and Water Quality

a. Surface Water

Tomahawk Creek is a tributary of Indian Creek which is a tributary of the Blue River. Indian Creek originates in the southern part of the Upper Indian Creek Basin (Figure 2, Page I-7). Tomahawk Creek originates in the southwestern portion of the Tomahawk Creek Basin (Figure 2, Page I-7). It generally flows northeastward joining Indian Creek about 300 feet below the sewage treatment plant outfall (Figure 1, Page I-3). Below the Tomahawk Creek junction, Indian Creek continues flowing eastward joining the Blue River 4.5 miles downstream of the treatment plant site on the Missouri side of the state line. In the Lower Indian Creek Basin, storm water runoff from developed areas and non-point sources of pollution related to agriculture contribute to the present water quality problems of Indian Creek.

Surface water records for Indian Creek at the 103rd Street and U.S. Highway 69 permanent gaging station indicate discharges are extremely variable. This gage is locate approximately 4 miles upstream from the sewage treatment plant. Records for the gage are available from March 1963 to September 1971. During this 8 year period, the average discharge was 23.9 cfs. A maximum discharge of 5,250 cfs was recorded on June 5, 1965. There are periods of no flow that occur at various times each year, i.e., there are periods of no flow during 1969 in the months of February, April, June, and September. (6)

Surface water records from May 1939 to September 1972 are available for the Blue River gage at Bannister Road. The average discharge for the 33 year period was 139 cfs. A maximum discharge of 41,000 cfs occurred on September 13, 1961. Periods of no flow occurred from September 1939 to February 1940 and again in August 1946. (7)

Although the access road to the treatment plant is occasionally inundated, the actual treatment facilities have never been rendered inoperable due to flooding. The plant was designed for a maximum flood elevation of 846 feet; a level not anticipated more than once every one hundred years.

b. Groundwater

The limestone and shale rocks of the Pennsylvanian Age contain fresh or slightly saline water. Wells in these aquifers generally yield less than ten gallons per minute. By contrast, sand and gravel deposits in the Kansas River valley yield 150 to 1,000 gallons per minute. In the smaller stream valleys, yields range from 25 to 100 gallons per minute. The fresh water in the river valleys is used for drinking water purposes in rural areas. It is believed that non-point sources of pollution from agriculture infiltrate the groundwater. Although specific information is not available, it is believed that Indian Creek does not serve as a recharge area for groundwater supplies.

c. Water Quality Standards

Water quality standards for the State of Kansas apply to Indian Creek. Although presently classified Class "B", it is expected that Indian Creek will be classified as a Class "A" water to be protected for body contact recreation (Appendix A, Page A-2). Both General Criteria and Specific Criteria apply.

II. ALTERNATIVES

A. Introduction

Seven alternative plans for treating sewage flows from the ultimately developed Lower, Middle and Upper Indian Creek and Tomahawk Creek Basins have been considered. Alternative Plans A through G involve various combinations of treatment locations and discharge points. Various elements of plans consider diversion outside the present drainage basin for flows ranging from diversion of only those originating from Upper and Middle Indian Creek Basins to diversion of total flows. A summary description of each alternative evaluated including the locations of the various treatment facilities, treatment level, subsequent discharge points, and costs is shown on Table 4, Page II-3. Figure 7, Page II-4 shows the locations of the alternative discharge points and treatment plant locations.

The alternative plans are:

PLAN A. Advanced waste treatment of dry weather flows and secondary treatment of wet weather flows from the Tomahawk and Indian Creek Basins at the present plant site. All treated flows would be discharged to Indian Creek.

PLAN B. All flows from the Tomahawk and Indian Creek Basins would receive secondary treatment at the present site and be diverted through a gravity tunnel system for discharge to Turkey Creek.

PLAN C. All flows from Tomahawk Creek and Indian Creek would be diverted by gravity to a proposed Mill Creek treatment plant for secondary treatment and discharge to the Kansas River.

PLAN D. Dry weather flows from the Indian Creek and Tomahawk Creek Basins would be transported to the Kansas City, Missouri Blue River Sewage Treatment plant for secondary treatment. Wet weather flows would receive secondary treatment at the Indian Creek site and be discharged to Indian Creek.

PLAN E. All flows from both the Upper and Middle Indian Creek Basins would be diverted to the Mill Creek Basin for secondary treatment and discharge. Dry weather flows from Tomahawk Creek and Lower Indian Creek Basins would receive advanced waste treatment for discharge into Indian Creek and wet weather flows would receive secondary treatment for discharge into Indian Creek.

PLAN F. All flows from Upper and Middle Indian Creek Basins would be diverted to the Mill Creek Basin for treatment and discharge. All flows of the Tomahawk and Lower Indian Creek Basins would be diverted to Turkey Creek after secondary treatment at the present site.

PLAN G. All flows from the Upper and Middle Indian Creek Basins would be diverted to the proposed Mill Creek Basin Plant for secondary treatment and discharge into the Kansas River. Dry weather flows from the Lower Indian Creek and Tomahawk Creek Basins would be exported to the Blue River Treatment Plant for secondary treatment and discharge into the Missouri River. Wet weather flows from Lower Indian Creek and Tomahawk Creek Basins would receive secondary treatment at the existing Indian Creek Sewage Treatment Plant and be discharged into Indian Creek.

TABLE 4
SUMMARY TABLE OF ALTERNATIVES AND COSTS

PLAN	SERVICE AREA	TREATMENT SITE		TREATMENT LEVEL		DISCHARGE POINT		RELATIVE COST(4) PRESENT WORTH BASIS
		Dry Weather	Wet Weather	Dry Weather	Wet Weather	Dry Weather	Wet Weather	
A	Indian & Tomahawk Creeks	Existing Indian Cr.		(1)AWT	(2)Secondary	Indian Creek		$ 7,296,000
B	Indian & Tomahawk Creeks	Existing Indian Cr.		(3)Secondary	(2)Secondary	Turkey Creek		40,100,000
C	Indian & Tomahawk Creeks	Mill Creek near Kansas River		(3)Secondary	(2)Secondary	Kansas River		59,000,000
D	Indian & Tomahawk Creeks	KC,MO	Existing Indian Cr.	(3)Secondary	(2)Secondary	Missouri River	Indian Creek	51,705,000
E	Upper & Middle Indian	Mill Creek near Kansas River		(3)Secondary	(2)Secondary	Kansas River		24,250,000
	Lower Indian & Tomahawk	Existing Indian Cr.		(1)AWT	(2)Secondary	Indian Creek		
F	Upper & Middle Indian	Mill Creek near Kansas River		(3)Secondary	(2)Secondary	Kansas River		43,882,000
	Lower Indian & Tomahawk	Existing Indian Cr.		(3)Secondary	(2)Secondary	Turkey Creek		
G	Upper & Middle Indian	Mill Creek near Kansas River		(3)Secondary	(2)Secondary	Kansas River		50,230,000
	Lower Indian & Tomahawk	KC,MO	Existing Indian Cr.	(3)Secondary	(2)Secondary	Missouri River	Indian Creek	

(1) Advanced waste treatment which includes nitrification, disinfection

(2) Holding, filtration, disinfection

(3) Conventional Secondary Treatment, disinfection

(4) Costs do not include base levels of treatment which are common to all alternatives. Costs shown include only elements which differ among alternatives.

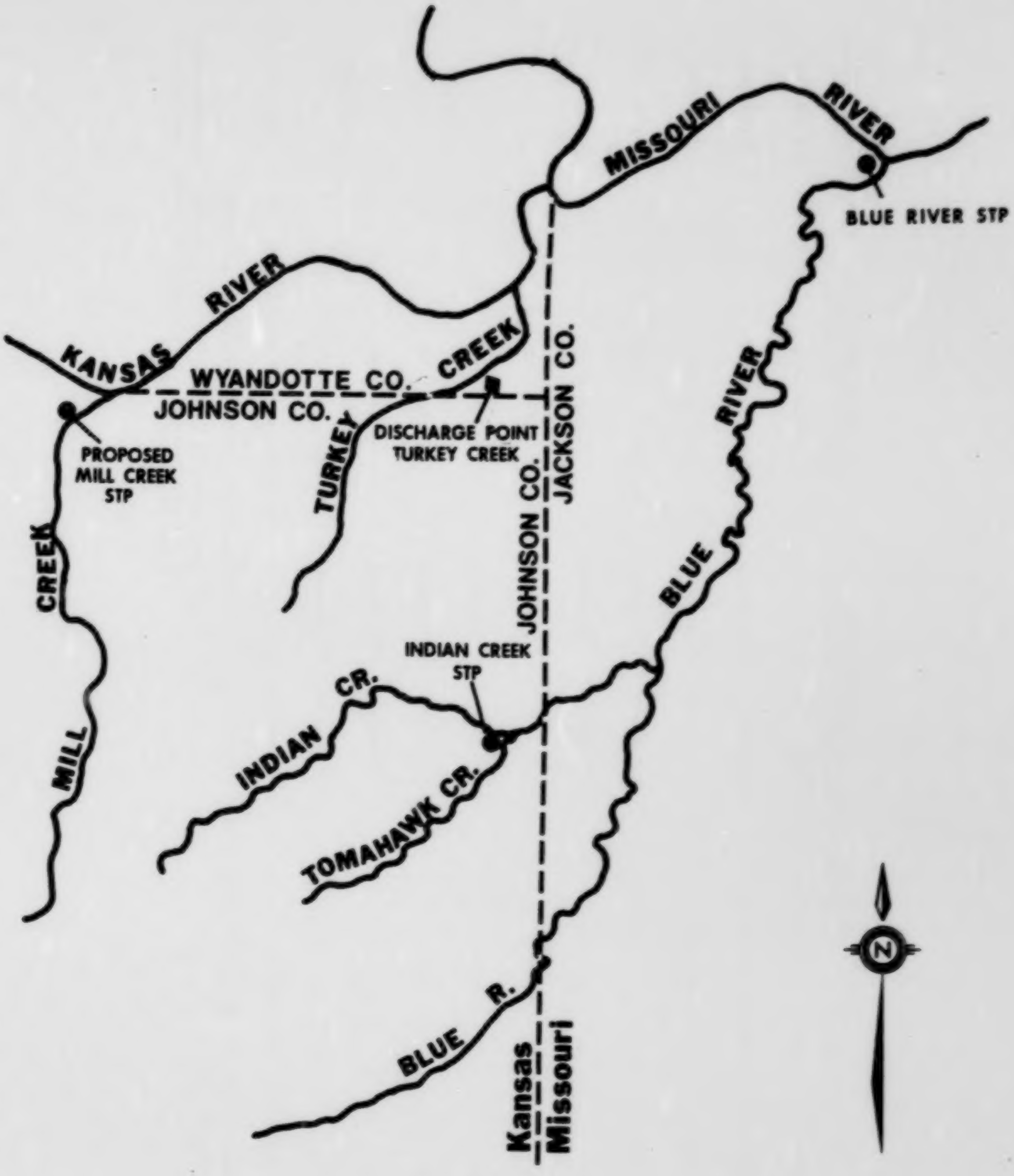

MISSOURI RIVER
BLUE RIVER STP
KANSAS RIVER
WYANDOTTE CO.
JOHNSON CO.
TURKEY CREEK
DISCHARGE POINT TURKEY CREEK
PROPOSED MILL CREEK STP
MILL CREEK
JACKSON CO.
JOHNSON CO.
BLUE RIVER
INDIAN CREEK STP
INDIAN CR.
TOMAHAWK CR.
BLUE R.
Kansas
Missouri
N

FIGURE 7

LOCATION OF ALTERNATIVE DISCHARGE SITES IN RELATION TO INDIAN CREEK SEWAGE TREATMENT PLANT

Three additional alternatives were considered:

1. Diversion of untreated waste to a point within the Turkey Creek Basin for treatment and discharge to Turkey Creek.

2. Transport of both dry and wet weather flows from the Indian and Tomahawk Creek Basins to Kansas City, Missouri.

3. Do nothing.

1. The diversion of untreated waste to a point within the Turkey Creek Basin for treatment and discharge to Turkey Creek was considered. Investigations conducted by the district indicated that insufficient land area, topographic limitations, and the proximity of possible sites to existing developed areas preclude further consideration of this alternative. In addition, it would involve a diversion of waste across the county line into Wyandotte County.

2. Initial review of other alternatives considered the conveyance of both dry and wet weather flows from Indian and Tomahawk Creek Basins to Kansas City, Missouri. Present planning of the Kansas City, Missouri facilities at the Blue River plant site indicates that primary facilities would be available for peak dry weather flows from Indian Creek and Tomahawk Creek Basins in addition to those anticipated from Kansas City, Missouri. However, it is judged by the Johnson County Main Sewer District No. 1, that available sites at the Blue River location would not be adequate to handle wet weather flows from Johnson County. Therefore, the

alternative of conveying wet weather flows to Kansas City, Missouri, was removed from further consideration.

3. The "do nothing" alternative would not provide waste treatment facilities for the ultimate development in Indian Creek and Tomahawk Creek. This alternative, if chosen, would provide the opportunity for new developments to be on either septic tanks or privately owned treatment plants. Neither of these are considered desirable because of the difficulty in controlling operation and maintenance of private facilities and because these types of facilities often develop problems such as bad odors or undesirable discharges.

B. Cost Effectiveness of Feasible Alternatives

1. Treatment Level

The treatment level noted in Table 4, Page II-3 is that level which is required to meet proposed water quality standards and anticipated effluent limitations for receiving stream in question as indicated by the discharge point. For dry weather flows, the only variation of treatment level applies to the dry weather discharges to Indian Creek as noted for Plans A and E. The water quality standards as described in the Appendix, Page B-5 sets a limit for undisassociated ammonium hydroxide in the receiving stream which will require nitrification within the treatment process prior to discharge. Treatment of dry weather flows for discharge to all other alternative discharge points consider that conventional secondary treatment, including disinfection, will be adequate to meet applicable requirements.

The method of treating wet weather flows differs from "conventional treatment"in that the flows are dilute in nature and vary considerably in quantity and duration. During much of the time, no flows will be received in excess of the dry weather flow plant capacity and during these periods, the wet weather facilities will be idle. Treatment facilities for wet weather flows include holding basins, filtration, and disinfection; and apply equally to all discharge points.

2. Location of Treatment Plant

The location of the treatment works for each alternative is shown under the heading "Treatment Site" in Table 4. All alternatives with the exception of Plan C would require treatment to some degree at the existing Indian Creek plant site. Plans A and B would ultimately provide treatment for both dry and wet weather flows from the entire Indian and Tomahawk Creek Basins at the existing site. Plan D would provide treatment of only wet weather flows at the site prior to discharge to Indian Creek.

Plans E and F would be treating both dry and wet weather flows for only lower Indian and Tomahawk Creeks, and Plan G would provide wet weather treatment only for lower Indian and Tomahawk Creeks.

a. Mill Creek Diversion

Plan C provides for the exportation of both dry and wet weather flows from the entire basins for treatment at a site in the Mill Creek basin near the Kansas River. Plans E, F, and G provide for exportation and treatment of all flows emanating from upper and middle Indian Creek for treatment at the Mill Creek site.

A possible Mill Creek basin treatment plant site would be immediately west of the confluence of Mill Creek and the Kansas River in an area that is currently agricultural and very lightly developed. Mill Creek basin covers approximately 40,000 acres and is made up of 13 minor watersheds. The basin is largely rural with some development along the south and east sides of the basin. Most existing development lies within the corporate limits of Olathe, Shawnee, and Lenexa. It is projected that the population within the Mill Creek basin will reach approximately 100,000 by 1996. Existing waste treatment facilities consist of only those necessary to serve existing development. Long range development plans call for interceptor sewer facilities conveying waste to the treatment plant site adjacent to the mouth of Mill Creek at the Kansas River. Implementation of any of the alternatives being considered for diversion of flows from Indian and Tomahawk Creeks to Mill Creek would initiate the interceptor sewers and treatment facilities for Mill Creek at an earlier date than would otherwise be required.

b. Turkey Creek Diversion

Two of the plans provide for exportation of treated flows to Turkey Creek. Plan B would export all wet and dry weather treated flows from both basins, while Plan F would export only treated flows from the lower Indian Creek and Tomahawk Creek basins to Turkey Creek.

Implementing the plans which consider diversion of treated flows to Turkey Creek discharge would require construction of a conveyance from the existing Indian Creek plant site to the discharge point on Turkey Creek. The conveyance would involve a combination of open cut and tunnel construction and would parallel the general routing of Mission Road. The anticipated discharge point to Turkey Creek would be within the northwest corner of Section 24 at a point south of existing Interstate Highway 35.

C. Kansas City, Missouri Blue River Plant

Two plans provide for conveyance of untreated dry weather flows to the Kansas City, Missouri Blue River Treatment Plant. Plan D would convey those flows from all the basins to the Kansas City, Missouri Plant while treating and discharging wet weather flows into Indian Creek. Plan G would convey only dry weather flows from the lower Indian Creek and Tomahawk Creek basins to the Blue River basins to the Blue River Treatment Plant. Wet weather flows would be handled as indicated in the Summary.

3. Economic Analysis

Various methods of evaluating the relative economics of the alternatives were considered by the district. The relative cost shown in the summary (Table 4) is on the present worth basis using a 6% interest rate, and covers the projected growth for that period. The present worth basis of analysis is a method recognized as being appropriate for this type of evaluation. Other possible methods of analysis include total cost for the ultimate period, total cost for an interim period, initial capital cost, and others.

The rate at which expenditures would be required varies according to the various alternatives. Construction of waste treatment facilities may be staged to meet the short term demands consistent with development rate. However, projects including large pipe lines or tunnels would involve initial construction costs which are large in relation to the alternatives not requiring such facilities. Large initial costs in comparison to projected incremental costs are significant in that initial large expenditures are allocated to a limited number of users in the service areas in the earlier years. In addition, the forecast of growth attempts to consider longer range development forecasts is likely to be less reliable than those which consider a shorter forecast period. It is believed that the present worth basis of comparison provides a good indicator of what the solution at this point in time should be.

The costs shown on the summary (Table 4) are relative costs of only those items peculiar to each alternative which are in addition to a base level requirement of all alternatives. For example, a level of secondary treatment for dry weather flows is necessary at all locations, though for dry weather discharges to Indian Creek, additional treatment will be required for nitrification. Therefore, the only cost included in this comparison for treatment of dry weather flows is the additional cost for nitrification of dry weather flows for Plan A and for the lower Indian and Tomahawk Creek portion of Plan E.

The other significant economic variable between alternatives is for transportation. The alternatives which consider diversion of treated or untreated flows out of the basin, or for conveyance of flows to the Kansas City, Missouri Blue River site include this additional consideration.

The relative costs also include considerations of operation and maintenance on a present worth basis for the additional facilities above the base level.

4. Wet Weather Flows

It is proposed by the district that facilities be provided to accommodate peak wet weather flows in magnitudes of 0.01 CFS per acre for the tributary area ~~being~~ served. On the basis of ten persons per acre, this amounts to a peak flow during wet weather of approximately 650 gallons per capita per day. If peak dry weather flow is 250 gallons per capita per day as proposed, the difference of 400 gallons per capita per day represents the peak quantity of infiltration/inflow entering the sanitary sewer system during wet weather.

Regulations require that the design of waste water treatment works shall be cost effective and that no future grants be made on projects where there is excessive infiltration/inflow. Excessive infiltration/inflow is defined (40 CFR 35.905-4) as the quantity of flow which can be economically eliminated (or prevented) as determined by a cost effectiveness analysis comparing the correction or prevention of the infiltration/inflow conditions with increasing the treatment works' capacity to provide the required treatment. Since a major portion of a service area is yet to be developed, prevention as opposed to correction is of essence.

Estimates have been made by the district of the various elements of flow which constitute the wet weather flows. The district conducted a survey entitled "Sanitary Sewer Capacity and Surface Drainage Survey for Mission Township Sewer District No. 1 - Johnson County, Kansas." This survey covered an existing developed area of approximately 15,000 houses and the estimated flows based on measurements for two-inch rainfall were as follows:

a. Downspouts - 3.26 mgd.
b. Driveway, areaway, and patio drains and 7.35 mgd.
c. Basement drains - 15.75 mgd
Total Flow - 26.36 mgd.

The basement drains are presumed to include flows emanating from foundation drains as most of the existing residences in Johnson County have foundation drains connected to the basement drain plumbing. Based on an occupancy of 3.5 persons per dwelling, the estimated peak rate of infiltration/inflow would be 500 gallons per capita per day. Total peak flow would then be an estimated 750 gallons per capita per day, by adding the 250 gallons for peak dry weather flow.

The district has estimated that elimination of downspouts, driveway, areaway and patio drains, which is now prohibited on new construction, would reduce the value by 200 gallons per capita per day. Statutory requirements now in effect will prevent the connection of interior or exterior foundation drains to the basement drain plumbing on all new construction. It is recognized that improper drainage around the residences, improperly located window wells, etc., will result in unwanted waters reaching the basement drain system to a certain degree. However, the elimination of a physical connection of foundation drains to the sewer system, and adequate enforcement of building codes will eliminate significant amounts of these excessive infiltration/inflows.

It will be several years before the results of foundation drain connection elimination will be conclusive as to its reduction of peak wet weather flows. The successes realized will be directly applicable to the estimated cost of future conveyance and treatment facilities within the basins.

5. Wet Weather Flow Effects on Economic Analysis

This study assumes that the base level of treatment for all alternatives would include holding, filtration and disinfection of wet weather flows. The relative costs for treatment shown in the summary (Table 4), however, are insensitive to these costs since they are representative of only the additional cost variations among alternatives over this base level. Therefore, the relative costs shown in the summary would, in regard to treatment, be unaffected by the successes realized by elimination of extraneous flows.

The costs of the alternatives which include diversion or conveyance in large sewers or tunnels would not be directly proportional to the reduction in peak flows because of the economies of scale in sewer and tunnel construction. The relative costs shown for Plans A and D would be unaffected since no conveyance provisions are made for wet weather flows in these alternatives. All other alternatives would be reduced to some degree.

In light of the uncertainties as to the amounts of wet weather flows necessary to convey and treat in the future, it is not possible to compute meaningful relative cost figures for the alternatives affected, other than to recognize that they would be reduced in cost.

In addition to the ultimate quantity for wet weather flows, the future cost of facilities will be affected by the exact level of treatment that will be required to meet effluent limitations and water quality standards for the wet weather flows. As stated previously, all alternatives will include a base level of treatment for wet weather flows consisting of holding, filtration, and disinfection. Statutory requirements now in effect are being interpreted to necessitate that degree of treatment. If it can be demonstrated at a later date that treatment works of lesser complexity will meet effluent limitations and not violate water quality standards, actual costs for treatment of acceptable wet weather flows would be reduced.

As in the case of quantity of wet weather flows, the complexity of the treatment facilities and therefore the estimated future costs for same, are uncertain in light of the lack of current data to demonstrate acceptability of a lesser degree of treatment than is assumed for this study. Even though a total cost would be influenced by this variable, and since an equal degree of treatment was assumed for treatment of wet weather flows in all alternatives, the relative cost figures shown are not affected by this variable.

C. Environmental Impacts and Other Considerations

1. General

Table 5, Page II-16 is a summary of the possible adverse environmental impacts in the following categories: (1) aesthetic impact of site location, (2) land commitment, (3) receiving stream quality, (4) construction activities and (5) odors, and other considerations (not necessarily adverse) such as development inducement and flow diversion for each alternative plan. Each alternative plan is rated according to impact from 1 to 5 with the numerical rating of 1 as very low impact and a rating of 5 as extremely high impact (no alternative was deemed to have an extremely high impact in any category).

Political constraints (not indicated on Table 5) may occur wherever treatment or transport facilities traverse a county or state line. The Wyandotte county line would be crossed in Plan F and possibly in Plan B

TABLE 5
SUMMARY OF POSSIBLE ADVERSE ENVIRONMENTAL IMPACTS AND OTHER CONSIDERATIONS OF ALTERNATIVES

	*Possible Adverse Environmental Effects					Other Considerations	
PLAN	Aesthetic Impact of Site Location	Land Commitment	Receiving Stream Quality	Construction Activities	Odors	Development Inducement	Flow Diversion
A	4	1	2	1	3	2	1
B	4	2	1	3	3	2	3
C	1	3	1	3	2	4	3
D	2	2	1	2	1	2	3
E	4	3	2	3	3	4	1
F	4	4	1	4	3	4	3
G	2	3	1	3	2	4	3

*Categories 1 - very low impact

to

5 - extremely high impact

Note: 1. Each of the above effects was rated independently of the other effects. The basis for the rating is described in the narrative.

2. Costs of the various alternatives are given in Table 4, Page II-2.

where treated flows would be discharged to Turkey Creek. In Plans D and G, the use of treatment facilities at the Blue River Plant would require arrangements with Kansas City, Missouri.

a. Probable Adverse Environmental Effects

(1). Aesthetic Impact of Site Location - the desirability of the treatment site in terms of the surrounding area's existing and future land use. Projected land uses for the area around the proposed Mill Creek plant are industrial. Present and projected land use around the Blue River plant is also industrial. Present and projected land use around the Indian Creek plant is residential and commercial with a buffer green strip area of public land between the plant and residential areas (Figure 5, Page I-14). Therefore, Plans A, B, E, and F, which require expansion of the Indian Creek plant for treatment of dry and wet weather flows are assigned a rating of 4. Plans D and G are rated 2 because of the limited Indian Creek plant expansion needed to treat wet weather flows on an intermittent basis. Plan C is rated as 1 because all flows would be diverted to the Mill Creek plant.

(2) Land Commitment - the additional land required for treatment and transport facilities. Plan A is assigned a 1 rating because if additional land for plant expansion is required in the future, this plant will still have the least land commitment requirement. Plans B and D are rated 2 because additional land area is needed for flow diversion to Turkey Creek or the Blue River plant. Plans C, E, and G are assigned a 3 because of the need to commit land that otherwise would not be committed for new sewer routing and to use additional land for the proposed Mill Creek

plant. Plan F is assigned a 4 rating due to the additional land needed for flow diversion to Turkey Creek, the routing of new sewers through the Mill Creek basin and proposed construction of a Mill Creek treatment plant.

(3) Receiving Stream Quality - effects of discharges on aquatic habitat while meeting applicable state stream standards. Plans A and E are rated 2 as significant quantities of treated flows will be discharged into Indian Creek. Plans C, D, and G call for dry weather flows to be discharged into the Kansas or Missouri Rivers or into both of these bodies of water which have greater waste assimilative capacities than Indian Creek. Plans B and F involve discharges to Turkey Creek, a stream presently receiving industrial waste loads. Plans B, C, D, F and G are rated 1.

(4) Construction Activities - environmental effects during treatment and transport facilities construction. Plan A would require the least construction activities, and is rated as 1. Plan D, diversion of dry weather flows to the Blue River plant in Kansas City, Missouri calls for a gravity sewer to the plant which will probably be combined with proposed sewers for Kansas City, Missouri. Plan D is given a 2. Plans B, C, and E are assigned a 3. Plan B involves a tunnel and/or open cut to Turkey Creek. Plans C and E require the construction of transport facilities to Mill Creek and a plant on Mill Creek. The implementation of Plan F calls for the tunnel and/or open cut to Turkey Creek, the construction of transport facilities to Mill Creek and a treatment plant on Mill Creek. Plan F is assigned a

rating of 4 because of the greatest construction activity and resulting impacts.

(5) Odors - those odors which emanate from the treatment plant only. Plan D is given a 1 because the additional waste loads to the Blue River treatment plant will not effect a detectable change in odors emanating from plant operation in an industrial area. Plans C and G are rated 2 because of some odor resulting from secondary waste treatment at the proposed Mill Creek plant. Plans A, B, E, and F are rated 3 because the expansion of the Indian Creek plant to accommodate all or part of the dry weather flows from the Tomahawk and Indian Creek basins may occasionally result in odor problems in nearby residential areas.

b. Other Considerations

(1) Development Inducement - the accelerated development in a basin due to the installation of waste transport or treatment facilities. Plans A, B, and D are rated 2 as treatment and transport facilities will be located in already developed basins of Johnson County. Because the extension of interceptor sewers into the Upper and Middle Indian Creek Basins and into Tomahawk Creek Basin is common to all seven alternatives, a rating of 2 instead of 1 is assigned to plans having the least impact in this category. All other plans which include flow diversion into the relatively undeveloped Mill Creek Basin are rated 4.

(2) Flow Diversion - the maintenance of flow in Indian Creek. Plans A and E are rated 1 because they provide for treated dry and wet weather flows to be discharged into Indian Creek raising the present flow.

Plans B, C, D, F, and G are assigned a 3 because significant flows are diverted to other receiving streams.

D. Summary

Table 4, Page II-3 is a summary of locations of treatment facilities, treatment levels, subsequent discharge points and costs for each alternative. Table 5, Page II-16 is a summary of environmental impacts and other considerations.

On the basis of a twenty year, 6 percent present worth analysis, Plan A is the most cost effective. The relative cost includes, above the base level, costs for initial and incremental additions to the existing waste treatment plant of facilities required to meet effluent limitations and proposed water quality standards. Plan A considerations include only treatment works since discharge of all treated flows is to Indian Creek. All other plans include costs for transport facilities to divert and/or convey part or all flows to other locations for treatment and/or discharge. The level of treatment for all plans except Plan A and a portion of Plan E requires not only the base level of treatment, but also a large initial investment in transport facilities which is included in the relative costs.

Ratings of the various alternatives for each environmental effect are shown in Table 5.

Plan C has the lowest effect on aesthetic impact of the alternatives while Plans A, B, E, and F are the highest because of their proximity to residental areas. Under the land committment, Plan A has the lowest rating because the alternatives would require additional land for plant sites and/or conveyance facilities. Under the effect on receiving stream quality, Plans B, C, D, F and G are rated lowest because their discharge would be to a major stream (Kansas or Missouri Rivers). Plan A and E are rated as having slightly higher impacts because of the relative size of Indian Creek. In construction activities, Plan A would have the least effect since all construction will be at the existing plant site. The other alternatives will have additional effects because they require additional construction. Odors were considered to be of average impact for alternatives A, B, E and F because they are located near residential areas. Plans C, D and G will be located away from residential areas and will have less effect.

In other considerations, Plans A, B and D will induce development in the Tomahawk and Indian Creek basins only. Plans C, E, F and G will also induce development in the Mill Creek Basin. Flow diversion out of the Indian Creek basin was rated as having the least effect for Plans A and E. The other alternatives require that part of flows be diverted from the basin.

From the standpoint of political constraints, Plans A, C and E should be the easiest to implement.

III. DESCRIPTION OF WASTE WATER TREATMENT FACILITIES

A. Existing Facilities

Figure 1, Page I-3 shows a layout of the existing treatment facilities serving the Lower Indian Creek Basin.

1. The plant is a high-rate trickling filter facility with a design average dry weather flow of 7.0 mgd and total maximum treated flow capacity of 17.5 mgd. The trickling filter effluent is chlorinated. A 6.5 acre aerated polishing lagoon further reduces effluent BOD_5 and suspended solids. Solids are anaerobically digested and the sludge is dewatered by vacuum filtration. The sludge is presently spread on a county farm and tilled into the soil. Maximum treatment plant efficiency is estimated to be greater than 85% BOD_5 removal.

B. Proposed Facilities

1. Preliminary Phases

The present 7 mgd treatment facility is planned for expansion to its full treatment capacity of 11 mgd. Completion of construction and commencement of operation of the expanded facilities is planned by the year 1976.

a. Project C200381

The project, as proposed in the grant application, provides for the relocation of the Indian Creek channel, a new access driveway from Mission road, an intercepting storm sewer in and along the abandoned creek bed, perimeter fencing of the plant site, landscaping, pipe alterations and appurtenant work.

The plant site (Figure 1, Page 1-3) is surrounded on three sides by main channel and an overflow channel of Indian Creek. On the fourth side is Tomahawk Creek. The proposed channel change will enlarge and realign the existing overflow channel of Indian Creek above Tomahawk Creek and eliminate the existing main channel of Indian Creek which loops through the site. The old channel will then be used as additional space for plant expansion.

The present access road to the sewage treatment plant from Mission Road via 111th Street is inadequate. A direct access road from Mission Road will be built. The planned roadway will meet acceptable standards and follow a route which will eliminate the need for a major bridge structure (Figure 1, Page 1-3).

Table 6, Page III-3 lists the proposed plant site improvements in detail and the cost of each. The total estimated project cost is approximately $673,800 of which $534,300 is for construction. The remaining $139,500 is for other services: Technical $53,400, Legal and Fiscal $26,700, Administrative $6,000 and Contingency $53,400.

b. 1976 Expansion

Figure 8, Page III-6 shows the layout proposed for the final improvements to the Indian Creek Main Sewer District No. 1 (Lower Basin) treatment facilities.

1. The improvements consist of the addition of two

TABLE 6

JOHNSON COUNTY, KANSAS
INDIAN CREEK MAIN SEWER DISTRICT NO. 1

CONTRACT NO. 11
PLANT SITE IMPROVEMENTS

ESTIMATE
May, 1971

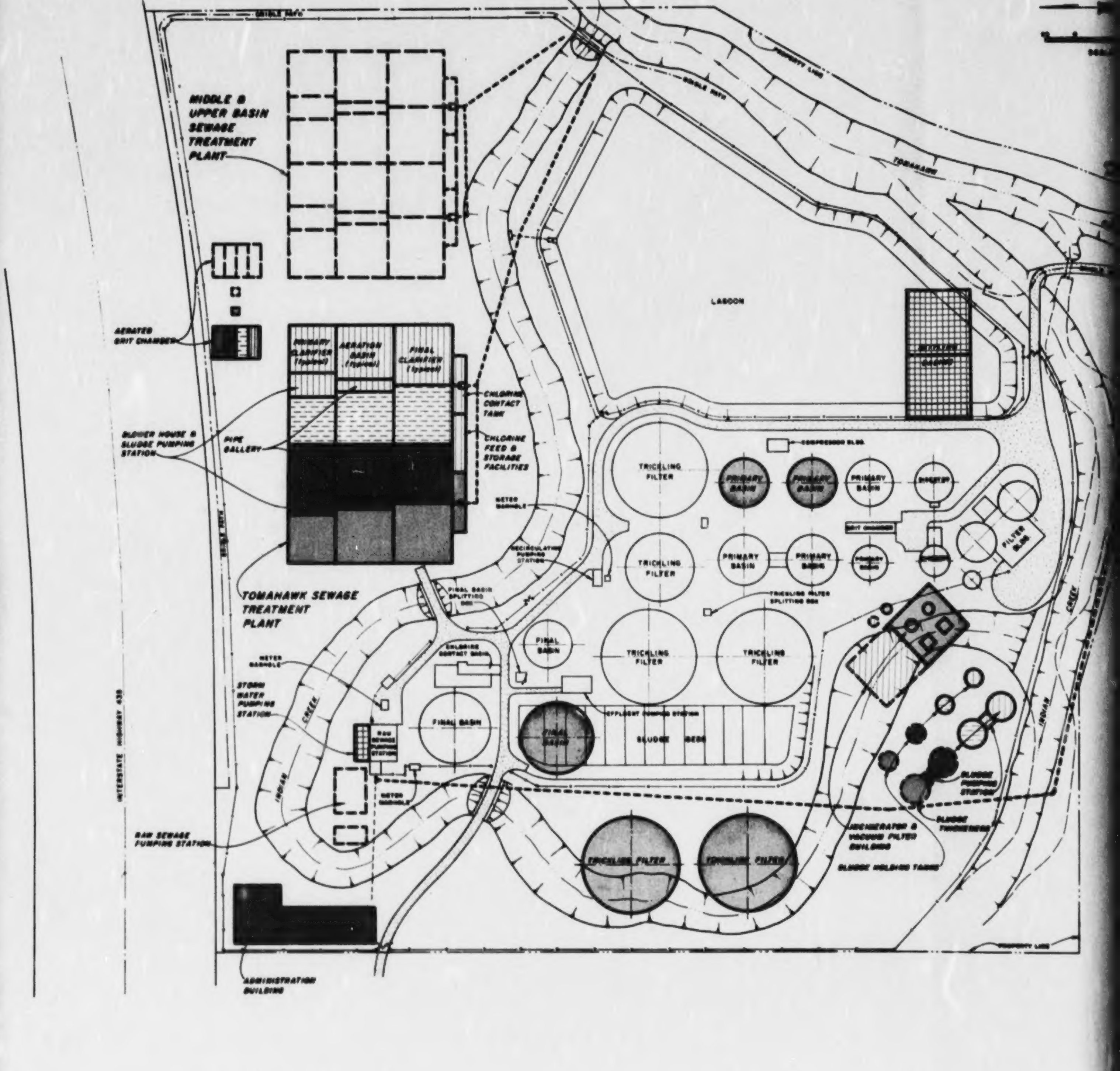
Item	Quantity	Unit	Unit Cost	Total Cost
			$	$
Site preparation				
Move in			LS	2,460
Clear and grub			LS	7,500
Dewatering			LS	21,400
Removal				
Curb	525	lin ft	1.00	525
Asphalt surfacing	300	sq yd	1.50	450
Catch basin	2	ea	100.00	200
Fence (to be reused)	2,580	lin ft	0.50	1,290
Cutlet structure, 12"	1	ea	75.00	75
Pipe and Headwalls			LS	2,000
Miscellaneous			LS	1,600
Channel changes				
Excavation				
Earth	15,000	cu yd	2.15	32,250
Rock	800	cu yd	16.00	12,800
Rip-rap	146	cu yd	16.00	2,336
Roads				
Excavation	1,380	cu yd	4.50	6,210
Asphaltic Concrete				
7" Base	3,820	sq yd	5.50	21,010
2" Surface	3,820	sq yd	1.50	5,730
Tack coat	1,340	gal	0.35	469
Curb and gutter	580	lin ft	5.35	3,103
Corrugated metal pipe				
48"	14	lin ft	35.00	490

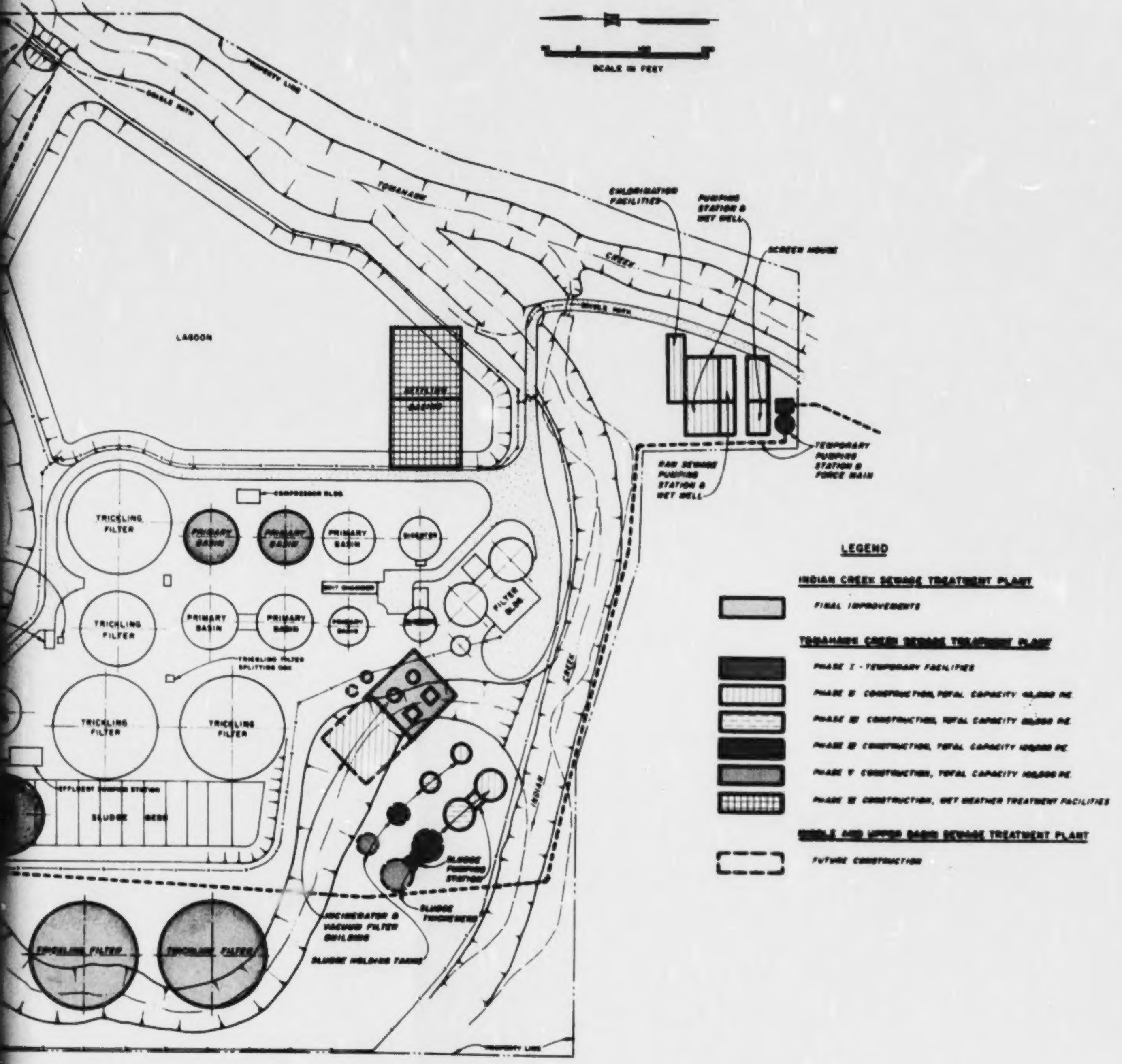
TABLE 6 (Cont.)

Item	Quantity	Unit	Unit Cost	Total Cost
			$	$
36"	102	lin ft	24.50	2,499
24"	97	lin ft	16.00	1,552
18"	6	lin ft	16.00	96
12"	70	lin ft	7.80	546
Catch basin, Type "B"	2	ea	970.00	1,940
Storm sewers				
Reinforced concrete pipe, Class III				
90"	565	lin ft	136.75	77,264
78"	950	lin ft	108.60	103,170
66"	79	lin ft	80.00	6,320
60"	138	lin ft	71.20	9,825
54"	65	lin ft	62.80	4,082
48"	20	lin ft	47.00	940
36"	500	lin ft	35.00	17,500
30"	10	lin ft	29.00	290
18"	75	lin ft	20.00	1,500
15"	654	lin ft	15.00	9,810
Fittings			LS	13,800
Corrugated metal pipe, 16 ga.				
24"	25	lin ft	16.00	400
12"	5	lin ft	8.60	43
Standard manhole	9	ea	800.00	7,200
Special manholes				
No. 2			LS	6,550
No. 3			LS	4,750
No. 4			LS	14,000
No. 5			LS	7,650
No. 6			LS	11,000
No. 7			LS	7,500
No. 8			LS	6,300
No. 9			LS	10,800
No. 10			LS	10,300
Inlet structures				
A			LS	4,930
B			LS	4,950
C			LS	4,400
D			LS	4,900
E			LS	4,450
Landscaping				
Deciduous trees, 2"-2 1/2" caliper				
Pin oaks	45	ea	62.00	2,790
Sugar maple	50	ea	74.00	3,700
Green ash	20	ea	56.00	1,120

TABLE 6 (Cont.)

Item	Quantity	Unit	Unit Cost	Total Cost
Sycamore	15	ea	49.00	735
Evergreens				
Scotch pine, 8'-9'	14	ea	62.00	868
Austrian pine, 8'-9'	21	ea	62.00	1,302
Cannart cedar, 6'-7'	8	ea	49.00	392
Norway spruce, 6'-7'	4	ea	49.00	196
Seeding			LS	9,600
Effluent pumping station alterations				
Check valve, 16" Mission "Duo-Check"	3	ea	1,180.00	3,540
Piping alterations			LS	1,770
Miscellaneous				
Fencing				
Relocated - woven wire	1,460	lin ft	0.85	1,241
New - chain link	5,450	lin ft	3.75	20,437
Gates - chain link				
20'	1	ea	400.00	400
10'	1	ea	236.00	236
Water line, 3"				
Cast iron pipe incl. fittings	222	lin ft	5.35	1,187
Hydrant and gate valve, 3"	1	ea	430.00	430
Concrete blocking			LS	110
Relocate street lights	2	ea	535.00	1,070
TOTAL ESTIMATED CONSTRUCTION COST				$534,279


MIDDLE & UPPER BASIN SEWAGE TREATMENT PLANT
AERATED GRIT CHAMBER
PRIMARY CLARIFIER (typical)
AERATION BASIN (typical)
FINAL CLARIFIER (typical)
CHLORINE CONTACT TANK
CHLORINE FEED & STORAGE FACILITIES
BLOWER HOUSE & SLUDGE PUMPING STATION
PIPE GALLERY
METER MANHOLE
RECIRCULATING PUMPING STATION
TOMAHAWK SEWAGE TREATMENT PLANT
FINAL BASIN SPLITTING BOX
CHLORINE CONTACT BASIN
METER MANHOLE
STORM WATER PUMPING STATION
RAW SEWAGE PUMPING STATION
METER MANHOLE
RAW SEWAGE PUMPING STATION
INDIAN CREEK
ADMINISTRATION BUILDING
INTERSTATE HIGHWAY 435
BRIDLE PATH
PROPERTY LINE
TOMAHAWK
LAGOON
COMPRESSOR BLDG.
TRICKLING FILTER
PRIMARY BASIN
PRIMARY BASIN
PRIMARY BASIN
GRIT CHAMBER
FILTER BLDG.
TRICKLING FILTER
PRIMARY BASIN
PRIMARY BASIN
TRICKLING FILTER SPLITTING BOX
FINAL BASIN
TRICKLING FILTER
TRICKLING FILTER
FINAL BASIN
FINAL BASIN
EFFLUENT PUMPING STATION
SLUDGE BEDS
SLUDGE PUMPING STATION
SLUDGE THICKENERS
INCINERATOR & VACUUM FILTER BUILDING
SLUDGE HOLDING TANKS
TRICKLING FILTER
TRICKLING FILTER
INDIAN CREEK
PROPERTY LINE


SCALE IN FEET
PROPERTY LINE
BIKE PATH
TOMAHAWK
CREEK
LAGOON
SETTLING BASINS
CHLORINATION FACILITIES
PUMPING STATION & WET WELL
SCREEN HOUSE
TEMPORARY PUMPING STATION & FORCE MAIN
RAW SEWAGE PUMPING STATION & WET WELL
COMPRESSOR BLDG.
TRICKLING FILTER
PRIMARY BASIN
DIGESTER
GRIT CHAMBER
FILTER BLDG.
TRICKLING FILTER SPLITTING BOX
EFFLUENT PUMPING STATION
SLUDGE BEDS
SLUDGE PUMPING STATION
SLUDGE THICKENERS
INCINERATOR & VACUUM FILTER BUILDING
SLUDGE HOLDING TANKS
INDIAN
CREEK
PROPERTY LINE
LEGEND
INDIAN CREEK SEWAGE TREATMENT PLANT
FINAL IMPROVEMENTS
TOMAHAWK CREEK SEWAGE TREATMENT PLANT
PHASE I - TEMPORARY FACILITIES
PHASE II CONSTRUCTION, TOTAL CAPACITY PE
PHASE III CONSTRUCTION, TOTAL CAPACITY PE
PHASE IV CONSTRUCTION, TOTAL CAPACITY PE
PHASE V CONSTRUCTION, TOTAL CAPACITY PE
PHASE VI CONSTRUCTION, WET WEATHER TREATMENT FACILITIES
MIDDLE AND UPPER BASIN SEWAGE TREATMENT PLANT
FUTURE CONSTRUCTION

PROPOSED SEWAGE
TREATMENT PLANT LAYOUT
FIGURE 8

FIGURE III-1

primary settling basins, two trickling filter units, a final settling basin, and a building to house vacuum filtration and incinerator facilities. These improvements will expand the capacity to an average sewage flow of 11 mgd and a maximum flow capacity of 26.2 mgd.

2. Ultimate Expansion

a. General

Figure 8 also shows the ultimate proposed expansion at the Indian Creek Sewage Treatment Plant site.

1. The expansion will include facilities to treat sewage from Tomahawk Creek Basin and the Middle and Upper portions of Indian Creek Basin and portions of the Dykes Branch Basin. The present plant will be retained and two additional plants will be built at the site. The activated sludge process is proposed for the Tomahawk Creek treatment facilities and future Upper and Middle Indian Creek treatment facilities. Figure 8 illustrates that the land area available is adequate for adding both the Indian Creek Basin and Tomahawk Creek Basin improvements.

The existing plant site is owned by the Indian Creek Main Sewer District No. 1. It will be necessary for the Tomahawk Creek and Middle and Upper Indian Creek Districts to purchase portions of the plant site for their respective plants from the Indian Creek Main Sewer District No. 1. The Indian Creek District will continue its program of stage development for common use and the Tomahawk and Middle and Upper Indian Creek Districts can use the Indian Creek Main Sewer District No. 1 facilities on a contract basis.

Plant design, Table 2, Page I-12, for both the Indian Creek and Tomahawk Creek facilities is for an average flow of 100 gpcd (gallons per capita per day). At peak hours, maximum domestic flows of about 2 1/2 times the average can be expected. Therefore, the hydraulic capacity of the treatment facilities will be flows in excess of 250 gpcd which result from abnormally wet weather (400 gpcd). The separate facilities for treating extraneous flows will be designed to meet Kansas Water Quality Standards.

Table 2, Page I-12 summarizes the area, ultimate populations, and the average, maximum and extraneous flows in million gallons per day proposed for the ultimate expansion of the Indian Creek plant site. The ultimate population anticipated for the basins is 428,000. Maximum flow capacity (including extraneous) is 268.7 mgd.

b. Construction Stages and Treatment Facilities

The following is a description of the construction stages and design elements of the proposed Tomahawk Creek Basin treatment facilities. The design and construction of the Upper and Middle Indian Creek treatment facilities will be similar.

1. Construction Facilities. Construction of the plant will be done in phases. Each phase will have a capacity adequate to treat wastes from a population of 35,300 (with Tomahawk Lake) or 40,000

(without Tomahawk Lake). Each phase will start as soon as the contributing population growth warrants the necessary improvements. Figure 8, Page III-6 shows the general arrangement of the proposed units, indicating the phase during which each unit or set of units will be built. Table 7, Page III-10 identifies the improvements proposed for each phase of the work.

2. Treatment Facilities. Proposed primary treatment facilities will incorporate coarse screening, degritting, comminution (a pulverization process) and sedimentation of the raw sewage. Table 8, Page III-11 is a summary of the design parameters used in sizing the proposed primary facilities. The proposed secondary facilities will incorporate biological treatment by the "completely mixed" activated sludge process, secondary sedimentation, and chlorination facilities. A proposed nitrification process for ammonia removal after secondary treatment may be installed. Table 9, Page III-11 is a summary of the design parameters used in sizing of the proposed secondary facilities. Sludge processing and disposal of sludge (solids) from the primary sedimentation tanks includes holding, thickening, and pumping to the sludge handling facilities of the Indian Creek plant for digestion, mechanical processing, dewatering by vacuum filtration facilities and later incineration. Two six-hearth 22'-3" outside incinerators, each with a rated capacity of 11,000 pounds per hour of sludge having a moisture content of 80 percent are proposed. Natural gas will be used as auxiliary fuel. For pollution control, the multiple hearth incinerator will be provided with a reheat deodorizer that will

TABLE 7

SCHEDULE OF PLANT IMPROVEMENTS (PLANS 1 AND 2)

	PHASE I	PHASE II	PHASE III	PHASE IV	PHASE V	PHASE VI
Pumping Station	Factory Built	Permanent Expandable P.S.	Additional Pump	Additional Pumps	Additional Pumps	--
Aerated Grit Chamber	--	X (2 units)	X	X	--	--
Comminutor	--	X (2 units)	X	X	--	--
Primary Sedimentation	--	X	X	X	X	--
Aeration Basin	--	X	X	X	X	--
Blower House	--	X	Additional Blowers	X	Additional Blowers	--
Final Sedimentation	--	X	X	X	X	--
Sludge Pumping Facilities	--	X	Additional Pumps	X	Additional Pumps	--
Chlorine Tank	--	X	--	X	--	--
Chlorination Facilities	--	X	Additional Feeders	X	Additional Feeders	--
Thickeners	--	X	X	X	X	--
Incinerator Building	--	X	--	--	--	--
Vacuum Filter	--	x	--	X	--	--
Incinerator	--	X	--	X	--	--
Mechanical Sludge Processing	--	X	--	--	--	--
Administration Building, Garage and Maintenance Building	--	--	--	X	--	--
Wet Weather Flow	--	--	--	--	--	X*

*It is recommended that wet weather flow treatment facilities be constructed in Phase III.

TABLE 8

SUMMARY OF DESIGN CRITERIA-PRIMARY TREATMENT

Process Units	Design Criteria	+Physical Dimensions	
		Plan 1	Plan 2
Coarse Screens-2 units	20 mgd each	-	-
Aerated Grit Chambers-4 units	*Detention Time-5 minutes	10' x 10' x 23'L	9' x 10' x23'L
Comminutors-4 units	Flow-10 mgd/unit	25"	25"
Sedimentation Basins-4 units	*Detention Time 2.5 hours 600 gpd/ft^2	80' x 80' x 8' ++SWD	80' x 80' x 8' SWD

* At average design flow

TABLE 9

SUMMARY OF DESIGN CRITERIA-SECONDARY TREATMENT

Process Units	Design Criteria	+Physical Dimensions	
		Plan 1	Plan 2
Aeration Basins-4 units	*Detention Time-6 hours	90' x 90' x 16' SWD	84'x 84' x 16' SWD
Blowers-3 per basin	Basis of Design: 1.20 lb O_2/lb BOD_5/day @ 5% transfer efficiency	1600 cfm ea blower	1400 cfm ea blower
Final Sedimentation Basins-4 units	*Overflow rate: 500 gpd/ft^2 *Detention Time-4.7 hours	100' x 100'x 13' SWD	92' x 92' x 13' SWD
Chlorine Contact Basins-4 units	Detention time at max flow: 15 minutes	24' x 12' x 50'L	22' x 12' x 44'L

* At average design flow

+ Plan 1 is without the Tomahawk Creek Reservoir
Plan 2 is with the Reservoir

++ SWD is sidewall depth

burn, destroy, and deodorize the incineration gases. Quenchers and scrubbers will also be provided to remove entrained solids from the incineration gases and render the gases suitable for discharge to the atmosphere. Incinerator operation at a dry solids loading of 2,270 pounds per hour per unit at 60 percent volatile solids will produce about 68 tons of ash per week. Multiple hearth furnaces discharge ash continuously from the bottom hearth. The ash is inert and sterile and probably will be disposed of as landfill material. Wet weather flows in excess of plant hydraulic capacity will be pumped to wet weather treatment facilities and discharged to the creek after this treatment. The treatment will be designed to meet applicable Kansas Water Quality Standards.

c. Reliability, Personnel Requirements and Cost Estimate

1. The facilities will be designed to provide for maximum reliability. An alternate source of power will be provided. The treatment works include multiple treatment units, disinfection of plant effluent and wet weather flow treatment.

2. Personnel requirements for the proposed Tomahawk Creek activated sludge treatment facility are given in Table 10, Page III-14.

3. Based on early 1970 prices, cost estimates total $18,564,000 for the Tomahawk Creek plant as proposed. Cost differences

with or without construction of the proposed Tomahawk Lake for each phase are not significant. Cost of construction at a later date could be greater. Costs anticipated for construction of the Upper and Middle Basin facilities would be smaller, but proportioned to inflation increases.

TABLE 10

PERSONNEL REQUIREMENTS FOR THE PROPOSED TOMAHAWK CREEK ACTIVATED SLUDGE TREATMENT

	PHASE				
	II	III	IV	V	VI
Average Flow (mgd) Classification	4.0	8.0	12.0	16.0	
Superintendent	1	1	1	1	1
Operator II	4	5	5	5	5
Operator I	5	6	7	7	7
Mech. II	1	1	1	1	1
Electrician II	1	1	1	1	1
Maintenance Helper	1	1	3	3	4
Laborer	2	4	5	5	5
Laboratory Technician	2	2	2	2	2
	17	21	25	25	26

IV. ENVIRONMENTAL EFFECTS OF THE PROPOSED ACTION

A. Effects of Effluent Disposal

1. General

The existing Indian Creek Sewage Treatment Plant has been built, operated and maintained in accordance with present water quality standards. The three stages of treatment provide complete removal of all floatable and settleable materials, more than 85 percent reduction in BOD_5 and a reasonable reduction of micro-organisms. The Johnson County Sewer Districts have won two annual awards for having the best operated plants in Kansas in the last few years.

Kansas Water Quality Standards (Appendix B, Page B-9) classify Indian Creek as a Class "B" stream suitable for the following uses: Secondary contact recreation, preservation and propagation of desirable species of aquatic biota and associated wildlife, public, industrial and agricultural water supplies. The U.S. Environmental Protection Agency expects to promulgate Kansas standards which will classify Indian Creek as a Class "A" stream to be protected for the same water uses as identified above, with a change from secondary contact recreation to body contact recreation.

Interim and ultimate effluents of planned expansion at the Indian Creek Sewage Treatment Plant site will be required to meet promulgated Kansas water quality standards.

2. Stream Survey

The Environmental Protection Agency, Region VII, conducted a stream survey of the Blue River and its tributaries in the Kansas City Metropolitan Area during the Fall (September and October) of 1971. Figure 9, Page IV-3 identifies the sampling locations and Table 11, Page IV-4 lists the results of the sampling at the various stations.

a. Physical and Chemical Data

(1) Stream Flow (MGD). The flow at State Line (Station IC-3) was 5.5 mgd from the Indian Creek plant effluent. The source of the increased flow at Holmes Road (Station IC-2) is not identified. The bank of the stream was walked between these two stations and no significant discharges were observed. The results of a water quality survey taken in the Indian Creek vicinity between August 20 to 23, 1973 (Appendix B, Page B-17) indicate the increase in flow of 2.84 mgd at Holmes Road (Station IC-2) may be due to an inflow of groundwater between State Line Rd (Station IC-3) and Holmes Road (Station IC-2).

(2) Alkalinity and pH. The alkalinity ranges from 118 mg/l (milligrams per liter) at Stations IC-5 to a maximum value of 486 mg/l at Station IC-3. However, the treatment plant effluent (Station TC-1) has an alkalinity of 144 mg/l. The stream pH remains essentially constant throughout the study varying from 7.6 to 8.0.

FIGURE 9

SAMPLING STATIONS ALONG INDIAN AND TOMAHAWK CREEK SEPTEMBER 1971 SURVEY OF BLUE RIVER

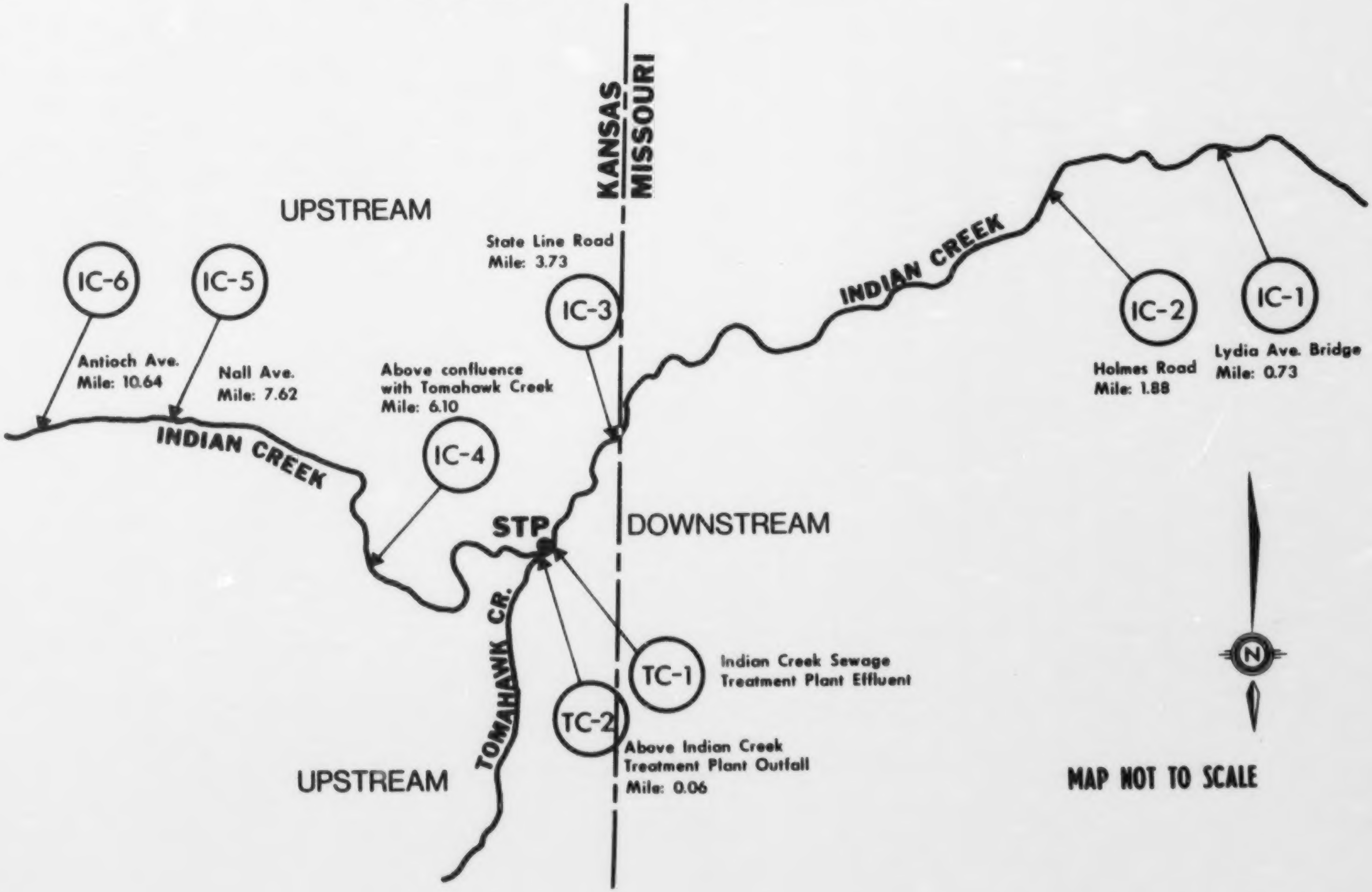

UPSTREAM
KANSAS
MISSOURI
State Line Road
Mile: 3.73
IC-6
IC-5
IC-3
INDIAN CREEK
IC-2
IC-1
Antioch Ave.
Mile: 10.64
Nall Ave.
Mile: 7.62
Above confluence
with Tomahawk Creek
Mile: 6.10
Holmes Road
Mile: 1.88
Lydia Ave. Bridge
Mile: 0.73
INDIAN CREEK
IC-4
STP
DOWNSTREAM
TOMAHAWK CR.
TC-1
Indian Creek Sewage
Treatment Plant Effluent
TC-2
Above Indian Creek
Treatment Plant Outfall
Mile: 0.06
UPSTREAM
N
MAP NOT TO SCALE

TABLE 11

PHYSICAL AND CHEMICAL CHARACTERISTICS OF INDIAN CREEK AND TOMAHAWK CREEK SAMPLING STATIONS

Stations	Date	Time	Temp. °C		Flow	Grab Samples										
		Mil.	Air	Water	MGD	pH	Alk. as $CaCO_3$ mg/1	Acid. as $CaCO_3$ mg/1	Spec. Cond. umho/cm	T.S.S. mg/1	BOD_5 mg/1	COD mg/1	Total P mg/1	Org. N mg/1	NH_3 N mg/1	D.O. mg/1
Upstream																
IC-6	Oct. 4, 1971	0900	15	18	0.52*	7.7	163	10	707	32	4.7	34	1.51	1.26	0.17	4.4
IC-5	Oct. 4, 1971	0830	15	16	0.10	7.7	118	3	511	13	4.9	34	0.46	0.81	0.09	4.8
IC-4	Sept. 29, 1971	0950	23	22	0.62*	8.0	142	4	716	26	14	50	1.45	2.8	0.02	6.5
TC-2	Sept. 29, 1971	1015	23	22	0.007*	7.8	169	6	537	24	6.6	25	0.17	0.64	0.02	5.2
Plant Effluent																
TC-1	Sept. 29, 1971	0825	23	23	6.0+	7.8	144	8	1160	14	13	53	8.8	1.9	3.5	-
Downstream																
IC-3	Sept. 28, 1971	1100	29	23	5.5	7.8	486	9	994	30	15	40	7.2	1.5	2.5	6.5
IC-2	Sept. 28, 1971	0950	25	22	8.34	7.6	318	8	839	44	11	32	5.05	2.10	0.38	5.9
IC-1	Sept. 28, 1971	0830	24	23	11.27	7.7	105	5	716	44	8.0	27	3.30	0.59	1.27	6.2

* Velocity too low to gauge - estimated from upstream stations.
+ Information supplied by plant personnel.

(3) Suspended Solids. The suspended solids range from 13 mg/1 to 44 mg/1 through the study area. The difference in values between upstream and downstream stations is not significant.

(4) Dissolved Oxygen (DO). Values range from 4.8 mg/1 to 6.5 mg/1 throughout the study area. Upstream values are generally lower than downstream values.

(5) Five Day Biochemical Oxygen Demand (BOD_5). The BOD_5 ranges from 4.7 mg/1 to 14 mg/1 throughout the study area. The difference in values between upstream and downstream stations is not significant.

(6) Ammonia Nitrogen (NH_3-N). Concentrations during the survey range from 0.02 mg/1 to 3.5 mg/1. The stations upstream from the treatment plant recorded values from 0.02 mg/1 to 0.17 mg/1. The treatment plane effluent had a concentration of 3.5 mg/1.

(7) Total Phosphorous (P) and Organic Nitrogen (N). Total Phosphorous (P) ranged from 0.17 mg/1 to 8.8 mg/1 with the highest concentration in the treatment plant effluent. Organic Nitrogen (N) varied from 0.59 mg/1 to 2.8 mg/1. The treatment plant effluent contained a concentration of 1.9 mg/1 nitrogen.

b. Biological Data

(1) Fecal Coliform Count. Table 12, Page IV-7 contains the results of the stream fecal coliform analyses for each station. The fecal coliform count at the plant outfall (Station TC-1) was ten per 100 ml. Information compiled by the Missouri Clean Water Commission

at their 103rd Street monitoring station, downstream from the treatment plant, indicates a mean fecal coliform count of 2,600 per 100 ml for samples collected monthly from September 1969 through November 1971. It is possible that the fecal coliform is from surface runoff from other sources.

(2) Effects on Stream Biota. Based on the macroinvertebrate samples collected and classified by the Environmental Protection Agency biologists in September 1971, as indicated in the Appendix, Page B-11 and Figure 10, Page IV-9 about four miles of water quality degradation was observed below the sewage treatment plant outfall. Figure 10 shows the number and types of macroinvertebrates collected at each station and classified as pollution sensitive or pollution tolerant organisms. The bar graph shows that the number and type of organisms change from pollution sensitive to pollution tolerant 80 yards downstream from the plant effluent (Station TC-0.5). The first station below the outfall (Station IC-1), approximately 4 miles downstream, shows recovery to essentially similar aquatic biota as above the outfall. During the survey, the water and substrate in the area of State Line Road (Station IC-3) was visibly emerald green, an indication of eutrophication. Chemical data on Total Phosphorous and Organic Nitrogen (Total P = 7.2 mg/l, Organic N = 1.5 mg/l, Table 11 Page IV-4) indicates high nitrate and phosphate concentrations at the station.

3. Effects of Ultimate Plant Effluent

a. Compliance with Proposed Kansas Standards

Treatment efficiency of the present plant is estimated, by the Johnson County Sewer District, to be approximately 85%

TABLE 12

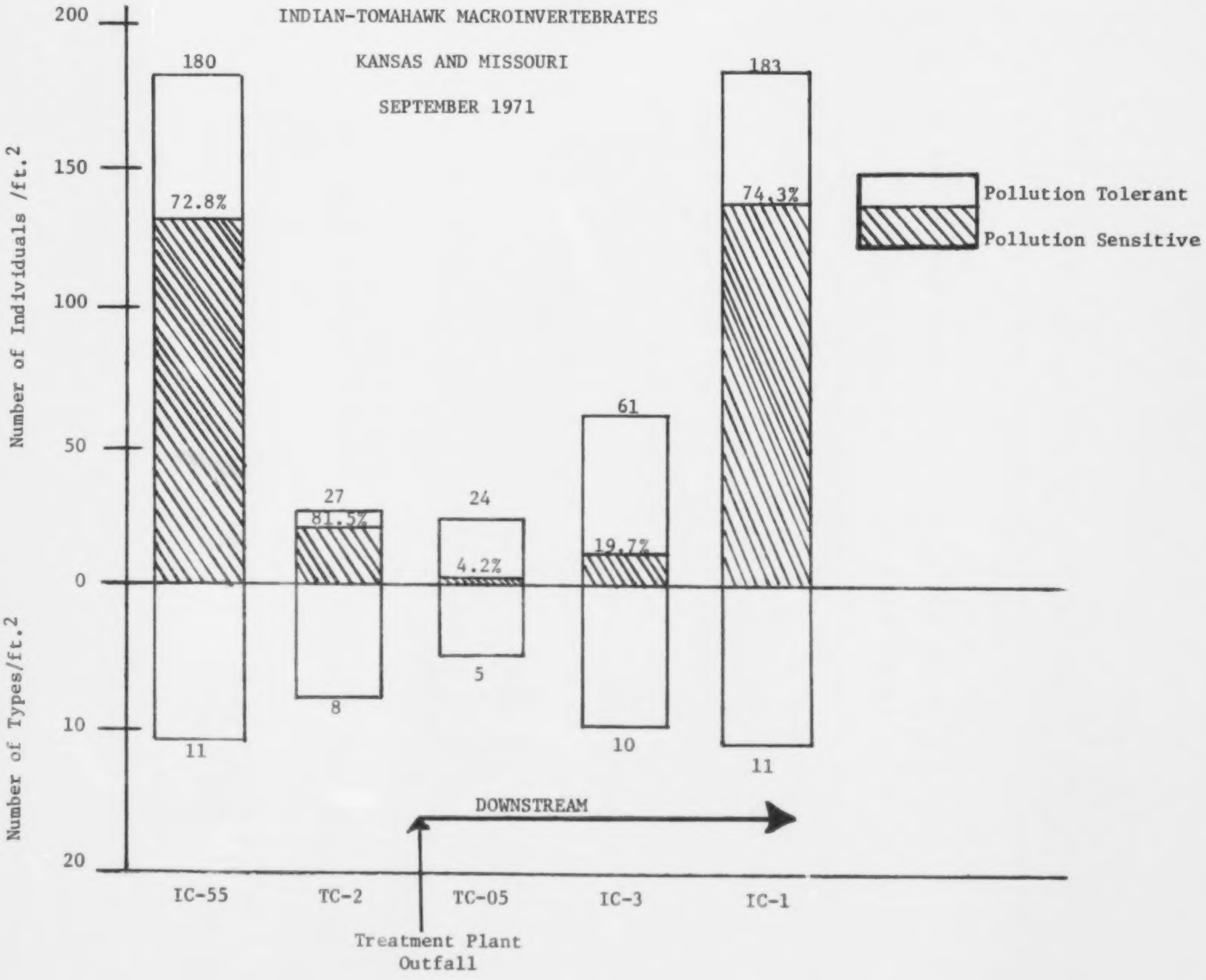
FECAL COLIFORM COUNTS OF INDIAN CREEK AND TOMAHAWK CREEK SAMPLING STATIONS

Stations	Fecal Coliform No. Per 100 ml
Upstream	
IC-6	410
IC-5	470
IC-4	330
TC-2	420
Plant Effluent	
TC-1	10
Downstream	
IC-3	4,000
IC-2	500
IC-1	450

BOD_5 removal. Treatment efficiency of the ultimate plant expansion is estimated at 95% BOD_5 removal. This degree of BOD_5 reduction and disinfection will produce an effluent which will meet the Kansas water quality standards. An increase in volume of effluent from 7 mgd to an average flow of 42.8 mgd will result in increased total loads (pounds of pollutants) to the stream. However, a proportionate level of dilution (42.8 mgd) in combination with an increased treatment level (95%) will result in concentrations of organic and inorganic substances slightly less than those presently discharged. Occasionally, extraneous flow discharges may add organic and suspended solids loads to the stream.

According to Corps of Engineers Report,(4) the planned Tomahawk, Indian and Wolf-Coffee lakes will allow for increased flow in the creeks and ultimately the Blue River. During periods other than flooding, seepage and minimum flow releases will maintain moderate base flows in Tomahawk and Indian Creeks for greater dilution of effluent discharges.

Kansas Standards classify Indian Creek as a Class "B" water. The Environmental Protection Agency expects to promulgate the standards so that Indian Creek must meet the criteria for Class "A" water which have stricter limits for Bacteria and Dissolved Oxygen content. In Class "A" waters (1) fecal coliform content under specified conditions,"... shall not exceed geometric mean of 200 per 100 ml sample..." and (2)"... the dissolved oxygen content shall be maintained at or above 5 mg/l..." Computations using the ultimate average flow of 42.8 mgd and DO concentrations at low stream flows indicate that the effluent of the proposed expansion will meet the stricter criteria. The ammonia limits of 0.15 mg/l



INDIAN-TOMAHAWK MACROINVERTEBRATES

KANSAS AND MISSOURI

SEPTEMBER 1971

FIGURE 10

(Undisassociated ammonium hydroxide) will be met by the proposed treatment process. It is also expected the plant will meet the other criteria as required.

Appendix B, Page B-13 includes the plan for laboratory control and requirements. It includes a list of the analyses to be performed on treatment plant effluent on a routine basis to monitor and evaluate treatment plant efficiency.

b. Effects on Groundwater

Indian Creek, in the vicinity of the sewage treatment plant, may serve as a recharge area for groundwater. Table 13, Page IV-11 gives the chemical character of selected wells, test holes and springs in Johnson County. The ultimate effluent is not expected to affect the quality of any groundwater aquifers which may be recharged by Indian Creek.

c. Summary and Conclusions

In September and October 1971, grab samples were analyzed on existing plant effluent and selected upstream and downstream stations on Indian and Tomahawk Creeks. The results of the studies conducted at low flow conditions, indicate the plant effluent has apparently degraded Indian Creek for approximately four miles downstream from the plant outfall. Additional studies will be made to supplement or confirm these results and to ascertain the effects of other possible waste sources on stream conditions. Stream degradation at the time of the survey may also have been the result of other waste sources.

TABLE 13

CHEMICAL CHARACTER OF GROUNDWATER - JOHNSON COUNTY (8)

Constituents	Range of Field Concentrations[1]	U.S.P.H.[2] Recommended Concentrations
Dissolved Solids	119-5,090 mg/l[3]	500 mg/l
Total Hardness	14-581 mg/l	
Iron	0.04-25 mg/l	0.3 mg/l
Fluoride	0.0-14 mg/l	1.2 mg/l
Nitrate	0.4-133 mg/l[1]	45 mg/l
Sulfate	1.6-1,320 mg/l	250 mg/l
Chloride	3.5-2,730 mg/l	250 mg/l

[1] Concentration of 45 mg/l only exceeded in three 45 samples collected.

[2] United States Public Health Service.

[3] mg/l - milligrams per liter = parts per million

During the periods of very low flow (less than 1 mgd), plant effluent is the only source of water supply to the stream. The survey of macroinvertebrate populations shows increased flows may not necessarily improve environmental conditions of the aquatic habitat.

In summary, the ultimate expansion plan provides for increasing the size of the treatment plant from 7 mgd to 42.8 mgd average daily flow capacity. Although the facility will meet Kansas water quality criteria even during periods of very low flow, the effluent may create a zone of degradation extending farther downstream than that which presently occurs. The exact distance downstream is difficult to predict at this time.

B. Effects of Treatment Facilities Expansion

1. Plant Siting

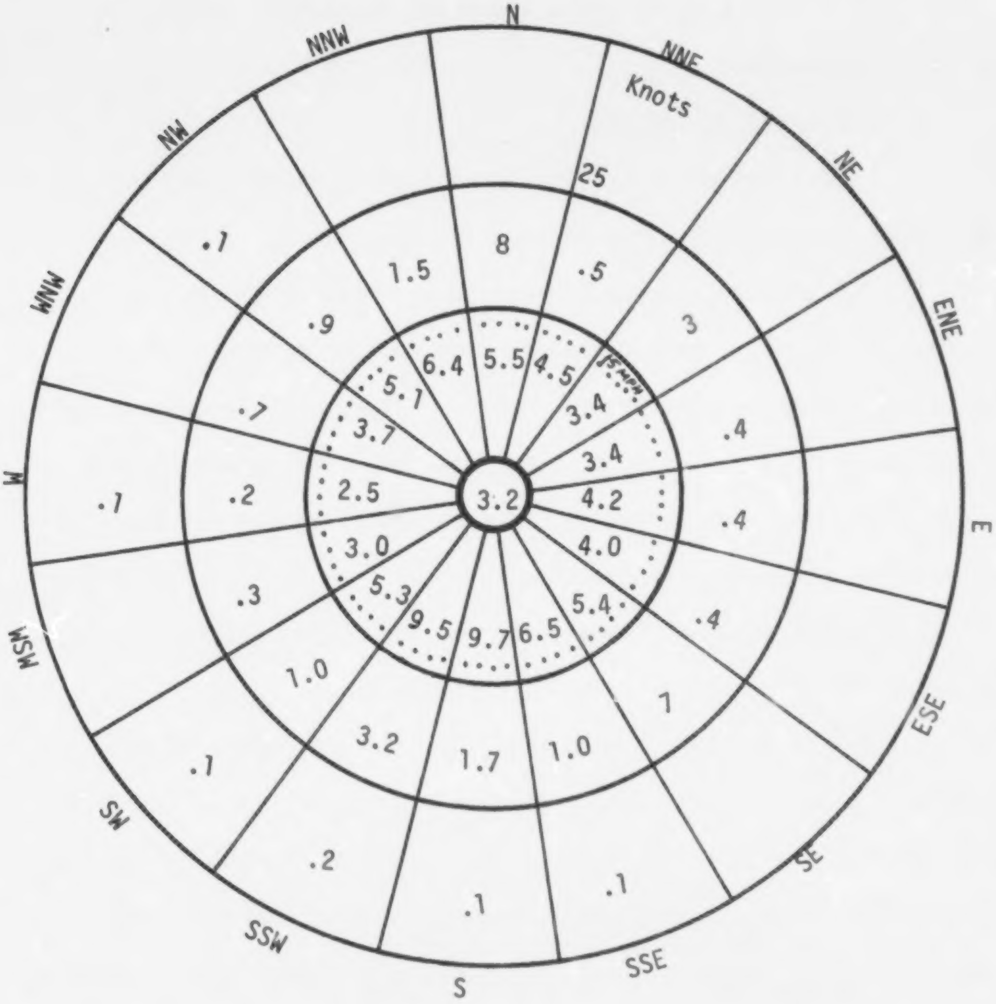
Figure 11, Page IV-13 is a wind rose taken at Olathe, Kansas. Predominant winds are from the south and south-southwest. The historical use of the land in the area is conversion of farm land to residential. Figure 4, Page 1-10 shows that a residential area currently exists less than one-half mile north of the plant. Future land use around the plant (Figure 5, Page I-14) will include residential development. A commercial area is planned adjacent to the plant site on the west with a moderate green belt area to the south and east. Steps should be taken to limit development around the site. New zoning plans for the City of Leawood should be available shortly.

No persons will be relocated or property condemned because of the plant siting.

The present road leading to the plant is occasionally flooded. Construction of the new access road should alleviate the problem of plant access during flood periods.

FIGURE 11

WIND ROSE FROM OLATHE, KANSAS



WIND DATA PERIOD: 3/45 - 5/46

1/47 - 5/62

The treatment facilities of the present Indian Creek plant are aesthetically pleasing and the grounds are well kept. The plant is fairly well hidden from view by trees and other vegetation located on the banks of Indian Creek.

2. Construction Effects

No disruption of traffic is expected as site expansion work will take place off the main highway (I-435).

The proposed channel change to eliminate the existing main channel which loops through the plant site will include enlarging and realigning the existing overflow channel. There will be some erosion during and immediately following construction until the stream bed and banks have stabilized. Construction and bank stabilization methods will be used where feasible to minimize erosion.

Damage to land from erosion due to exposed excavation will be minimized by proper construction techniques.

Some dust will be generated during construction of the proposed facilities. Dust control procedures (State of Kansas Air Pollution Emission Control Regulations, Sec. 28-19-51, Jan. 1, 1973) including the use of sprinklers, will reduce the level of particulate emissions. Air pollution and odors from construction equipment operation will be negligible. An increase in the noise level of the area will be temporary. Residents north of the plant are exposed constantly to some noise from I-435 traffic. The highway will serve as an effective barrier to noise generated during plant expansion. Some trees will be removed exposing more of the plant. The plant site will be landscaped, however, several years will pass before screening will be restored. Some loss of wildlife may occur with removal of land area used as natural habitats.

3. Operation

Odors in sewage treatment plants are associated with gases escaping to the atmosphere from open settling basins, sludge digesters, sludge processing equipment (especially vacuum filters) and biological growth on the filter media. Odors have been associated with the existing plant, however, an estimate of their frequency is not available. The proposed activated sludge type processes for the Tomahawk Creek and Middle and Upper Indian Creek treatment facilities will generate odors similar to those of the existing plant. The generation of odors within the treatment plants will be held to a minimal level by proper design and operation of the facilities.

Operation of the completed facilities may result in a slight increase over ambient noise levels. Potential sources of noise include process equipment such as pumps and blowers and the traffic associated with the operation of the facilities. The Occupational Safety and Health Act of 1970 imposes strict requirements on noise emission of plant equipment to protect plant workers. As a result, noise will be held to a minimum within the plant buildings through proper design and selection of equipment. The impact of the proposed facilities on noise levels in nearby residential areas would range from slight to none.

C. Effects of Sludge Handling and Disposal

1. Sludge Stabilization

Until the sludge handling facilities are installed at the Tomahawk Sewage Treatment Plant the sludge will be handled by the digesters and vacuum filtration facilities at the Indian Creek Sewage

Treatment Plant. A by-product of the sludge digestion process is the production of methane gas. The gas is recycled into the system to reheat the sludge digesters. After dewatering by vacuum filtration, the sludge is spread on a county farm and used as a soil fertilizer conditioner. The added sludge from the initial Tomahawk plant will be treated in the same manner.

With the installation of sludge handling facilities and incinerators, sludge will be dewatered by vacuum filtration and incinerated. To control pollution of the atmosphere, the incinerator will be provided with a reheat deodorizer that will burn, destroy and deodorize incineration gases. According to available information, a dentention time of 0.5 second and a temperature of 1200° should be sufficient to destroy the odors. When these conditions are not met due to operational difficulties, odors may be a problem. However, on a regular basis there will be no odors from the incinerator. Quenchers and scrubbers will also be provided to remove all entrained solids from the incineration gases and render the gases suitable for discharge to the atmosphere. The incinerators will meet the Standards of Performance for New Stationary Sources as proposed in FR 15411, Subpart Q dated June 11, 1973. Approximately 25 million cubic feet per year of natural gas will be needed to fuel the incinerators.

2. Final Disposal

Ash disposal will be at a state approved sanitary landfill. Odors emanating from incinerated sludge disposal sites will be minimal since sludge processing methods will reduce the organic content of the sludge to a point where it will not produce offensive odors.

D. Effects of Sewers

1. Primary Effects - Construction

Traffic disruption during construction of the interceptor sewers will be minimal as the Tomahawk, Middle and Upper Indian Creek Basins are in initial stages of development and there is little traffic in the area. Most existing roads are gravel on section lines.

Damage to land from erosion due to exposed excavation will be minimized by proper use of construction techniques. Land exposed from sewer installation will be reseeded as soon as possible. Stream banks and stream beds will be maintained and/or restored. Erosion control measures will be closely evaluated during project plan and specification review by the Environmental Protection Agency.

Dust will be controlled by proper roads and construction techniques the same as those used for treatment site expansion. Air pollution and odors from construction equipment operation will be negligible. An increase in the noise level in the undeveloped areas will be temporary and insignificant.

Burning of trees and other wastes generated during construction will comply with the State of Kansas Air Pollution Emission Control Regulations Sec. 28-19-47. If required, construction wastes will be disposed in state approved sanitary landfill.

Blasting will comply with local ordinances and is not expected to be a problem in the undeveloped areas. Herbicides will not be used during construction.

Appendix A, Page A-6 is an initial study done by Midwest Research Institute for the Kansas City District Corps of Engineers (4) to determine archaeological resources in the Blue River Basin.

The possibility exists that archaeological sites may be affected by the construction of the proposed interceptor sewers. The Environmental Protection Agency grant for the proposed project will include stipulations for artifact preservation during construction activities. Should any artifacts be uncovered, the contractor will be alerted to contact an archaeologist and appropriate plans for salvage excavation will be made.

2. Secondary Effects - Land Use Changes

The Tomahawk Creek Basin could be presently classified as mainly unzoned or zoned open space. The Indian Creek Middle and Upper Basins are categorized as lightly developed (less than 10% of its total land area is developed). A change in land use will probably occur due to the interceptor sewer construction. The open space and lightly developed areas will become more heavily developed with residences, commercial areas, and light industries. Presently, development in the basins is restricted due to lack of sewers. Rapid development is expected when sewers become available. A concurrent change from agricultural property with septic tanks to more densely sewered residential development will occur. Interceptors will be designed for ultimate development on an area-served basis. Construction of the sewers will be phased according to population requirements to control leapfrog development. However, costs for interceptors are borne by the local landowners and costs are too high for large tracts to remain undeveloped once sewer lines are laid.

A review of the Regional Comprehensive Plan for the Greater Kansas City Area (MARC) shows that the effects of interceptors on development is consistent with the future land use plans for the Tomahawk and Middle and Upper Indian Creek Basins. These areas are designated for future residential, commercial and light industrial development. If the treatment plant was not expanded, land developers would seek other means of providing the basins with sewer service so that development could occur.

V. SUMMARY - UNAVOIDABLE ADVERSE IMPACTS

A. Effluent Disposal

1. The ultimate effluent from the Indian Creek site may form a zone of degradation in Indian Creek although the Kansas Water Quality Standards will be met.
2. An increase in nutrient load to Indian Creek will result from treated extraneous flow effluent.

B. Construction and Operation of Proposed Treatment Facilities

1. Temporary noise levels will increase during construction due to construction equipment.
2. A loss of small area of natural wildlife habitat will occur.
3. Minimal odors associated with treatment processes may occur occasionally.

C. Sludge Handling and Disposal

1. Minimal odors associated with sludge digesters, vacuum filtration and incinerators may be noticed in the vicinity of the plant site.
2. Approximately 25 million cubic feet per year of natural gas will be used as fuel for the incinerators.

D. Sewers

Adverse impacts associated with land development and population growth are in part supported by interceptor sewer construction. Although the sewers will be designed to accept sewage from the basin populations, some areas now forested or with other vegetative or agricultural cover will yield to streets, parking lots, and grassed lawns. Stormwater runoff from these areas will be much greater after development since increased impervious area results from urban land development. Not only will runoff be greater, but the water will also contain more pollutants than from an undeveloped area. In any developed area, pollutants accumulate from air pollution fallout, miscellaneous litter, improper application of fertilizers and pesticides, pet droppings, wear of brake linings, tires and other parts of cars, all kinds of building materials, and street decomposition. Contaminants from these sources include, suspended solids, nutrients, oxygen demanding substances, bacteria, heavy metals, and pesticides. During periods of rainfall, many of these urban and rural contaminants are flushed into water courses as pollutants.

VI. SHORT-TERM USES VERSUS LONG-TERM PRODUCTIVITY

The proposed expansion of the existing treatment facilities and the ultimate construction of the Tomahawk Creek and the Middle and Upper Indian Creek Basin treatment facilities is scheduled to provide facilities in advance of population growth to prevent the capacity of existing facilities from being overloaded.

The construction phase of the system constitutes a short-term use of resources in the construction area. The physical permanence of the system itself, however, constitutes a long-term use of the land upon which it is constructed, and of the streams to which the treated effluent is discharged.

A 42.8 mgd ultimate site capacity with major new interceptors, as planned, would accommodate substantial population growth in the area. Therefore, an analysis of the relationship between local short-term uses of man's environment and enhancement of long-term productivity is a question of whether this project will tend to advance or accelerate the urbanization of this area. Clearly the expansion of the present plant site to a 42.8 mgd ultimate capacity over an extended period of time indicates an optimism which can only be based on the assumption that large land developments will insure rapid population growth in time to make the project financially feasible. It is projected by the Johnson County Sewer district that within fifty years or less, the entire capacity of the plant will be taken. This is obviously a significant long-term impact on the environment.

VII. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

The loss of a small area of vegetative cover for plant expansion is irretrievable for the life of the project.

Fuels, manpower and materials used in the construction of the plant are essentially irretrievable. Natural gas, petroleum products, and chemicals used in operation of the plants will also be considered irretrievable.

Secondary effects of the constructed sewer lines could be accelerated growth patterns for the area served by the line, resulting in further irretrievable and irreversible commitments of land resources.

VIII. Review Comments and Responses, Summary of Public Hearing, Conclusions and Recommendations

A. Summary of Comments* from Federal, State, and Local Agencies.

1. Agency: Kansas State Department of Agriculture, Division of Water Resources, Topeka, Kansas (Page C-4)

Comment: The project as outlined in the draft EIS may be subject to Kansas Statutes Annotated 24-105, 24-106, 82a-301 to 305 inclusive.

Response: A letter from the Johnson County (Appendix B, Page B-16) Main Sewer Districts Office dated October 29, 1973 indicates they are working with the Kansas State Division of Water Resources to definitely determine if the statutes are applicable to the proposed project.

2. Agency: Home Builders Association of Greater Kansas City

Comments: 1. Development, revenue, and a healthy environment for a substantial amount of property south of I-435 will result from present proposed improvements as well as ultimate plant expansion.

Response: 1. EPA has no response to this comment.

Comments: 2. Well prepared and discussed zoning and subdivision regulations are the means by which cities should determine use and density factors within the municipalities.

Response: 2. EPA has no response to this comment

Comments: 3. Project delay since May, 1971 has increased the cost of Project C200381 by 27% or $181,926. Costly delay must stop.

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*Appendix C

Response: 3. Agreed

Comments: 4. The draft EIS (IV-16, 17) indicates that enlargement of the present plant would remedy the overloading problem. Present project C200381 does not encompass enlargement of present plant facilities, but proposes improvement of existing facilities. Such changes will not affect odor levels. (EIS IV-16)

Response: 4. The problem of overloading was brought out at the Public Hearing September 20, 1973. The EIS does not discuss the present problem of overloading. Page IV-16 of the draft statement notes only that odors have been associated with the existing plant. Page IV-17 of the draft EIS indicates that planned incineration facilities will be equipped and operated so that odors may be eliminated. When these conditions are not met due to operational difficulties odor may be a problem. Proposed changes of Project C200381 will not directly affect odor levels.

Comments: 5. The present site is well suited for the present project as well as the remaining phases. In conclusion, the Home Builders Association of Greater Kansas City endorse the presently proposed Project C200381 and remaining phases and will support any efforts to further their construction.

Response: 5. Project C200381 is presently proposed for site improvements at the existing plant. The Environmental Impact Statement is not only for these initial improvements but also for ultimate expansion at the plant site to 42.8 mgd capacity to accomodate future wastes from the developed Indian Creek and Tomahawk Creek Basins.

3. Agency: Johnson County Main Sewer Districts, Shawnee Mission Kansas.

Comments: 1. The description of the project in the summary sheet does not clearly show that the only project presently planned is the channel improvement project. The text of the statement in its entirety is directed to future projects that at present have not been planned. It should be made completely clear that if future projects are the basis for this statement that no additional EIS will be required for such projects when and if proposed.

Response: 1. The summary sheet has been amended to clarify this point. Proposed project C200381 only sets the stage for future expansion at the present plant site. If Plan A, ultimate expansion of the present Indian Creek treatment plant site is selected and the treatment processes are implemented as described in the statement, no additional EIS will be required. However, if the ultimate plan of expansion is significantly changed or different plan is selected, another EIS could be required.

Comments: 2. Cost comparisons of alternatives are not presented in the Summary Sheet. Such data are sufficiently important to be included in the opening summary sheet along with the minimal description of the alternative solutions.

Response: 2. Agreed. The Summary Sheet will include a summary of the cost effectiveness of various alternatives.

Comments: 3. The last paragraph under 4. Alternatives (Summary Sheet) unduly discounts probable and viable alternatives. Additional publicly owned waste treatment plants are a certainty if authority to enlarge the present plant is not given. One such small plant is proposed by Olathe Kansas and has received EPA approval for a construction grant (200367). Feasibility studies for additional waste treatment plants are being conducted for the District. Two substantial land developers have made written requests for permission to construct small waste treatment plants to serve their areas. The considerable residential development presently occuring in unsewered areas of Indian Creek and Tomahawk Creek are presently served by septic tanks.

Response: 3. The Summary Sheet has been amended to, ".. the alternative of no additional treatment facilities was judged unacceptable from an environmental standpoint because of the undesirability of numerous small publicly or privately owned treatment plants or septic tanks resulting in bad odors in many residential areas and multiple waste discharge points upstream on Indian and Tomahawk Creeks." According to the EPA Environmental Impact Appraisal (Appendix B, Page B-23) Project 200367 includes two interceptors to serve about two sections of land and a one mgd activated sludge package plant with polishing lagoon. "The plant is considered an interim facility to be retired when treatment facilities for the complete Indian Creek basin are available." The "treatment facilities" referenced may be an alternative other than Plan A, ultimate expansion of the present plant.

Comment: 4. Special consideration should be given to the fact that the waste treatment plant was constructed in an area initially remote from any residential development. The fact that residential development occurred after the plant was in use is a good indication that little or no adverse environmental effect resulted from the plant.

Response: 4. At the public hearing September 20, 1973, Mr. George Walls representing the South Leawood Improvement Association, commented that he believed many homeowners in

Leawood had not been aware of the existence of a sewage treatment plant so near their residences at the time of purchase. Also, a series of expansions since initial operation of the Indian Creek plant by the Johnson County Main Sewer District in October 1956 has increased odors in recent years. The fact remains the plant is located near residential areas.

Comments: 5. EPA was not able to relate flow accretions and effects on two separate studies in 1971 and 1973. Please note attached "Characteristics of Urban Stormwater" to comments taken from EPA-R2-73-261-June 1973. The statement submitted by Mayor Ballard of Leawood at the hearing on September 20, 1973 notes the by - passing of sewage and other problems connected to the Leawood sewerage system. Since this by-passing occurs in small watercourses tributary to Indian Creek and the Blue River, it undoubtedly has an adverse effect on the water quality of the stream and could account for some of the accretions of flow and pollutants that are presently accounted for in EPA studies. By-passing of sewage from the Leawood system could also account for part of the odor problem in the area.

Response: 5. The statement (Section IV A.2a) has been amended to read, "The result of a water quality survey taken in the Indian creek vicinity between August 20 to 23, 1973 (Appendix B, Page B-17) indicate the increase inflow of 2.84 mgd at Holmes Road (Station IC-2) may be due to an inflow of groundwater between State Line Road (Station IC-3) and Holmes Road (Station IC-2)." Storm water and agricultural runoff pollution concentrations can be assumed constant in those reaches of Indian Creek and Tomahawk Creek which flow through developed areas of Indian Creek and Tomahawk Creek Basins and would not account for the flow accretion at Holmes Road (Station IC-2) or the zone of degradation observed downstream from the treatment plant outfall. The 1973 study also reaffirmed the absence of significant discharges either from by-passing or other sources along the reach between Stations IC-3 and IC-2. It is acknowledged that part of the odor problem for the city of Leawood could be from problems in their own sewage system.

Comments: 6. The District objects to EPA's change of the classification of Indian Creek from a Class B to a Class A stream, for the following reasons: (a) Indian Creek would be the only Class A stream in Kansas (b) without the effluent from the Indian Creek Waste Treatment Plant, Indian Creek would be an intermittent stream (c) at the present time, Indian Creek in Kansas is composed of the effluents from at least six waste treatment plants (d) an EPA grant has been given for an additional waste treatment plant on Indian Creek (200367) a short distance above our Indian Creek sewerage system. The stream classification by the Missouri Clean Water Commission (Appendix B) and approved by EPA does not appear consistent with the expressed intent to make Indian Creek a Class A stream. Note also attached Appendix C. The statement from the Kansas State Health Department presented at the Blue River Water Quality Standards Hearing of the Missouri Water Pollution Board, and Appendix D an excerpt from the Minutes of the Hearing on Water Quality Regulations of the Kansas State Department of Health.

Response: 6. The classification of Indian Creek as a Class A or Class B stream is not an issue in this impact statement. It has been determined(Section IV 3.a) that the effluent from the ultimate expansion will meet Class A criteria even during low flow conditions.

Comments: 7. It appears that there is an inadequacy of comment concerning the relative cost-effectiveness of the feasible alternatives. The Federal Water Pollution Act Amendments of 1972 (The Act) requires that adequate data and analysis demonstrate that the alternative selected is the most cost efficient in order to comply with requirements of the Act. In addition, the data should be included in the outstanding portion of the impact report where the results of the cost effective analysis will be read.

Response: 7. The Act requires that the selected alternative be the most cost efficient of all feasible alternatives. As required by the Act, the Administrator has issued proposed analysis guidelines (Federal Register, Vol. 38, No. 127, Tuesday, July 3, 1973) which indicate that the alternative determined to be the most cost effective shall be the one determined from the analysis to have the lowest present worth and/or equivalent annual value without overriding adverse non-monetary costs i.e., social and environmental considerations. Therefore, the most cost effective alternative may not be the "least cost" alternative in terms of direct monetary considerations if the applicable "trade-offs" with the non-monetary social and environmental effects are taken into account.

4. Agency: Black and Veatch Consulting Engineers, Kansas City, Missouri

Comments: 1. The description of the project in the summary sheet does not clarify the fact that the impact statement which follows is on the ultimate expansion of the plant to serve all of the area that could be tributary to the plant site by gravity when those areas are fully developed.

Response: 1. The summary sheet has been amended to clarify this point. Proposed project C200381 only sets the stage for future expansion at the present plant site. If Plan A, ultimate expansion of the present Indian Creek treatment plant site is selected and the treatment processes are implemented as described in the statement, no additional EIS will be required. However, if the ultimate plan of expansion is significantly changed or different plan is selected, another EIS could be required.

Comments: 2. Paragraphs 3 and 4 of the Summary Sheet in the draft EIS failed to report the relative values for impact and cost effectiveness as developed in the report.

Response: 2. Agreed. The Summary Sheet will include a summary of relative environmental effects and cost effectiveness of various alternatives.

Comments: 3. Paragraph 3 of the Summary Sheet in the draft EIS should consider that improvements to the plant may also reduce odor problems, air pollution from sludge handling and alleviate alternate or remove possible degradation of Indian Creek.

Response: 3. EPA does not agree. Although proper plant operation will keep them minimal, odor and air pollution problems will probably be increased at times with the addition of sludge digesters, vacuum filtration and incineration facilities. Section IV "Environmental Effects of the Proposed Action" demonstrates that plant expansion will result in additional degradation of Indian Creek.

Comments: 4. Paragraph 4 of the Summary Sheet in the draft EIS discounts as infeasible the development of the area with septic tanks or small privately owned plants. If Plan A is not implemented, pressures for development in the Indian Creek and Tomahawk Creek Basins would be strong and interim development would be served by septic tanks and small private plants.

Response: 4. The Summary Sheet has been amended to,".... the alternative of no additional treatment facilities was judged unacceptable from an environmental standpoint because of the undesirability of numerous small publicly or privately owned treatment plants or septic tanks resulting in bad odors in many residential areas and multiple waste discharge points upstream on Indian and Tomahawk Creeks." According to the EPA Environmental Impact Appraisal (Appendix B, Page B-23) Project C200367 includes two interceptors to serve about two sections of land and a one mgd activated sludge package plant with polishing lagoon. "The plant is considered an interim facility to be retired when treatment facilities for the complete Indian Creek basin are available." The "treatment facilities" referenced may be an alternative other than Plan A, ultimate expansion of the present plant.

Comments:	5. The statement in Section IC-4, "There are no endangered or locally threatened plant or animal species in the country" has been made in cognizance of the population growth and increase in use of waste treatment facilities within the project area.
Reponse:	5. More biological information has been added to this section including rare and/or endangered species.
Comments:	6. EPA was not able to relate flow accretions and effects on two separate studies in 1971 and 1973. In both studies there was an increase in flow from Mission Road to Holmes Avenue and concomitant changes in quality. The increases in stream flows and changes in water chemistry cannot be attributed wholly to the Indian Creek plant. The effects of overland flow on quality characteristics of samples taken at State Line and 103rd should be reviewed. Ponding and increases of parameters occur. Moreover, there appear to be some other sources of contamination.
Response:	6. The statement (Section IV A.2a) has been amended to read, "The results of water quality survey taken in the Indian Creek vicinity between August 20 to 23, 1973 (Appendix B Page B-17) indicate the increase in flow of 2.84 mgd at Holmes Road (Station IC-2) may be due to inflow of groundwater between State Line Road (Station IC-3) and Holmes Road (Station IC-2)." Storm water and

agricultural runoff pollution concentrations can be assumed constant in those reaches of Indian Creek and Tomahawk Creek which flow through developed areas of Indian Creek and Tomahawk Creek Basins and would not account for the flow accretion at Holmes Road (Station IC-2) or the zone of degradation observed downstream from the treatment plant outfall. The 1973 study also reaffirmed the absence of significant discharges either from by-passing or other sources along the reach between Stations IC-3 and IC-2. It is acknowledged that part of the odor problem for the city of Leawood could be from problems in their own sewage system.

Comment: 7. It appears that there is an inadequacy of comment concerning the relative cost-effectiveness of the feasible alternatives. The Federal Water Pollution Act Amendments of 1972 (The Act) requires that adequate data and analysis demonstrate that the alternative selected is the most cost effective in order to comply with requirements of the Act. In addition, the data should be included in the outstanding portion of the impact report where the results of the cost effective analysis will be read. The Summary Sheet of the EIS is deemed the appropriate location for presentation of costs.

Response: 7. The Act requires that the selected alternative be the most cost efficient of all feasible alternatives. As required by the Act, the Administrator has issued proposed analysis guidelines (Federal Register, Vol. 38, No. 127, Tuesday, July 3, 1973) which indicate that the alternative determined to be the most cost effective shall be the one determined from the analysis to have the lowest present worth and/or equivalent annual value without overriding adverse non-monetary costs i.e., social and environmental considerations. Therefore, the most cost effective alternative may not be the "least cost" alternative in terms of direct monetary considerations if the applicable "trade-offs" with the non-monetary social and environmental effects are taken into account.

Comment: 8. Cognizance is well taken of the fact that odors in sewage treatment plants are comparable. In Table 5, Section II, an attempt is made to rate potential odors at various sites rather than odors. The possible effects on people working in industrial areas is minimized while similar effects on people in residential areas is maximized. The report correctly states that odors can be held to a minimum at either type of location.

Response: 8. EPA has no response to this comment.

Comment: 9. Builders and developers of housing were well aware of the treatment facility from its infancy. Initial treatment units were well-buffered from residential units. Prior to the completion of I-435, the treatment facility was in a remote and sequestered location.

Response: 9. The fact that the treatment plant preceded the surrounding residential development and growth is no justification for present plant site development. The effect of future expansion on a new residential community must be considered just as the effects of the original facility on a remote and sequestered location were considered in the initial site selection.

Comment: 10. We do not agree that an appreciable possibility exists of scrubber effluent plumes condensing and creating hazardous conditions on I-435. Stack gases will be subcooled and flue gas exit temperatures of between 125 and 150 degrees F would be maintained. Ground fog does not occur in this area during the extremely low temperature conditions that would be required to produce vapor condensation in the exhaust gases. In light of these conditions the comment, "possible hazardous driving conditions occasionally," (UNAVOIDABLE ADVERSE IMPACTS-Section V, C.3) should be removed or at least revised to more clearly express the extreme improbability of such an event.

Response: 10. The comment has been removed from the statement. Considering the distance of the stack from the roadway and a prevailing northerly wind, the probability of such a problem developing is very small.

Comment: 11. Page V-1, Paragraph C, Item 2 lists as one of the unavoidable adverse impacts the commitment of large amounts of natural gas for incinerator fuel. Fuel oil could be utilized in lieu of natural gas. The sludge to be disposed of must be processed either at this plant or at some other location within the metropolitan area. The differential impact between processing at this plant and at an alternative point would be nil as auxiliary fuel would be required either at the Indian Creek Plant or at an alternative point where the sludge was incinerated.

Response: 11. We agree that the differential impact between processing at this plant and at an alternative point would be nil. However, regardless of where the sludge is burned, additional fuel will be required above the present demands unless alternate means of disposal are considered. The possibility of using oil is very questionable in light of today's impending shortage.

5. Agency: Department of Transportation, Secretarial Representative Kansas City, Missouri.

Comment: In the summary Section V Unavoidable Adverse Impacts, it is stated that possible hazardous conditions could occur on I-435 due to scrubber effluent plumes condensation. The final statement should be expanded to describe existing, possible frequency of condensation occuring, and its effect upon I-435.

Response: The sentence has been removed from the statement. Considering the distance of the stack from the roadway and a prevailing northerly wind, the probability of such a problem developing is very small.

6. Agency: Office of the Board of County Commissioners, Johnson County Kansas.

Comments: 1. Plan A provides for the orderly incremental addition of facilities to serve the ultimate needs of the basins and also permits the monetary costs to be coordinated with the county's ability to fund the projects. The county needs such a plan to keep pace with the NEPA standards for 1977.

Response: 1. All alternatives provide to the degree possible orderly and incremental additions of facilities to meet the increased needs over time within the basins. It is recognized that the alternatives requiring significant transport facilities have less flexibility since major underground construction has less flexibility when incremental additions are considered. However, the alternatives considering gravity interceptor sewers for transport facilities need not be constructed to the ultimate sizes as there are effective advantages of planned parallel construction when and if the need occurs. All alternatives must be included in a plan to upgrade as required to meet applicable effluent limitations.

Comment: 2. The alternatives to Plan A as shown are characterized by large scale expensive projects which must be constructed as single units with a capacity to serve the entire 40,000 acre basin. We have received opinions that with our present tax base we would be unable to sell bonds to fund these alternative plans, let alone supply the additional treatment increments required for basin development to meet the upgraded NEPA water quality targets.

Response: 2. See above response regarding cost effectiveness of initial construction to serve ultimate anticipated development. As for funding of the alternative plans, any selected must be feasible from the standpoint of funding the local share initially and in the future.

Comment: 3. The EIS states the Plan A is the most cost-effective of all plans presented based on present worth evaluation. This relative cost data should be supplemented with real dollar figures to indicate the cost per acre and the cost per taxpayer. We have anticipated that because of the wording of the regulations social-economic factors would be evaluated more extensively.

Reponse: 3. Non-monetary factors such as social and environmental will be considered along with the direct cost comparisons of the alternative. In addition, the feasibility of funding the local share would by necessity be demonstrated prior to selection of any alternative.

Comment: 4. We are concerned with potential costs from time delays related to the preparation of additional statements. It is understood that the EIS will and does deal with the development of ultimate treatment facilities at the Indian Creek site for the basins. We have now been advised that each phase of construction could, at your discretion require an EIS. We do not think the cost incurred in the development of this EIS as well as the delays can be justified if it is limited to this project and will not cover future expansion projects. It seems that the requirement of additional impact statements would force the sort of uncoordinated fragmented planning the regulations seek to eliminate.

Response: 4. It is a requirement of the National Environmental Policy Act of 1969 and the implementing regulations of EPA that (1) any project application for Federal participation be accompanied by an environmental assessment and (2) an environmental evaluation be conducted prior to the obligation of Federal funds. Where there are significant environmental effects or where there is significant public controversy and opposition to a project, it may be necessary that an EIS be written. If proposed projects are consistent with approved area-wide wastewater management plans and not in conflict with other criteria which is used to determine the necessity for a complete EIS, a statement may not be required. In these instances, a negative declaration indicating the intent to make a grant is issued.

This EIS was necessary because the proposed project was the first phase of a long-term development plan for waste water management in the basins. The results of the evaluations and conclusions are intended to be as conclusive as possible for assuring acceptability of consistent future decisions. There can be no positive assurances given that would preclude future complete environmental impact statements since laws, implementing regulations and guidelines could change over time. However, it is intended that the decision included in this EIS will set the pattern for the wastewater management plans and their implementation for the Tomahawk and Indian Creek Basins in the years to come.

Comment: 5. Odors described by citizens of Leawood will become minimal when deficiencies of that city's sewerage system are corrected. Analysis of the flow of the untreated sewage discharged to the surface waters by the City of Leawood's sewerage system could determine the source of pollution and increased flow EPA's stream studies found it difficult to explain.

Response: 5. The statement (Section IV A.2a) has been amended to read, "The results of a water quality survey taken in the Indian Creek vicinity between August 20 to 23, 1973 (Appendix B, Page B-17) indicate the increase in flow of 2.84 mgd at Holmes Road (Station IC-2) may be due to an inflow of groundwater between State Line Road (Station IC-3) and Holmes Road (Station IC-2)." Storm water and agricultural runoff pollution concentrations can be assumed constant in those reaches of Indian Creek and

Tomahawk Creek which flow through developed areas of Indian Creek and Tomahawk Creek Basins and would not account for the flow accretion at Holmes Road (Station IC-2) or the zone of degradation observed downstream from the treatment plant outfall. The 1973 study also reaffirmed the absence of significant discharges either from by-passing or other sources along the reach between Stations IC-3 and IC-2. It is acknowledged that part of the odor problem for the city of Leawood could be from problems in their own sewage system.

Comment: 6. We object to EPA's promulgating Indian Creek as the only Class A stream in Kansas. The state of Missouri's water quality standards dismiss Brush Creek as being unworthy of classification because it is considered to be an open sewer. Brush Creek is similar to Indian Creek as both streams are tributary to the Blue River, both flow through similar areas, are of comparable size, and should be subjected to the similar use requirements.

Response: 6. The classification of Indian Creek as a Class A or Class B stream is not an issue in this impact statement. It has been determined (Section IV 3.a) that the effluent from the ultimate expansion will meet Class A criteria even during low flow conditions.

Comment: 7. A decision by EPA to require transportation of effluent from the Indian Creek plant site in order to prevent the discharge of effluent to Indian Creek would be inconsistent with the EPA decision to approve construction and partially fund a treatment facility of two million gallons per day that will discharge effluent to Indian Creek.

Response: 7. The Summary Sheet has been amended to, "... the alternative of no additional treatment facilities was judged unacceptable from an environmental standpoint because of the undesirability of numerous small publicly or privately owned treatment plants or septic tanks resulting in bad odors in many residential areas and multiple waste discharge points upstream on Indian and Tomahawk Creeks." According to the EPA Environmental Impact Appraisal (Appendix B, Page B-23) Project C200367 includes two interceptors to serve about two sections of land and a one mgd activated sludge package plant with polishing lagoon. "The plant is considered an interim facility to be retired when treatment facilities for the complete Indian Creek basin are available." The "treatment facilities" referenced may be an alternative other than Plan A, ultimate expansion of the present plant.

Comment: 8. The statement that construction of a larger treatment facility at the site may produce air pollution and a possible zone of degradation in Indian Creek indicates that EPA has not determined that development of facilities at the present plant site would have an adverse impact upon the environment.

Response: 8. Based on present plant performance and information on incinerators and vacuum filters degradation of Indian Creek and air pollution from plant expansion seem likely. However, seepage from planned Indian and Tomahawk Lakes, if constructed, could increase flow to Indian Creek with consequent dilution of effluent effects and, on a regular basis, no air pollution should emanate from the plant.

Comment: 9. We would like to stress that our planning to date has conformed to future land use plans developed by the Mid-America Regional Council, the area planning agency.

Response: 9. EPA has no response to this comment.

7. Agency: U.S. Army Corps of Engineers, Kansas City District

Comment: 1. The difficulty of reading the site plan (Figure 1) due to a poor reproductive process should be corrected in the final statement.

Response: 1. Agreed. Figure 1 has been improved.

Comment: 2. In Section IC-1 the projected 1990 Johnson County population figures (540,000 to 630,000) are very high. The Mid-American Regional Council's population projection for Johnson County in the year 2000 is 377,400.

Response: 2. The population figure for Johnson County has been changed to reflect the Mid-America Regional Council's figures.

Comment: 3. In Section IC-2 present land use in Johnson County should include commercial as well as those presently listed.

Response: 3. Agreed. Present land use for Johnson County now includes commercial.

Comment: 4. The Corps names for the projects shown on the vicinity map (Figure 2) are Indian Lake and Tomahawk Lake. The official name of the river is the Blue River.

Response: 4. Figure 2 has been corrected with the proper names.

Comment: 5. Figure 4 "present land uses around existing plant" did not reproduce clearly in the draft. This should be corrected in the Final report.

Response: 5. Agreed. Figure 4 is more clear in the Final Statement.

Comment: 6. In Section IC-2b,c,d information concerning planned Tomahawk and Indian Lake should be corrected.

Response: 6. The noted corrections have been made. The fact that Tomahawk Lake will result in the loss of 20,000 people of the ultimate population in the Tomahawk Basin is obtained from the "Report on Sewerage Study for Tomahawk Creek Basin, Johnson County, Kansas" Black and Veatch Consulting Engineers, 1970. The average density for fully developed areas in Johnson County is about 10.5 persons per acre.

Comment: 7. In Section IC 2b(2) a sentence change is needed concerning the location of Tomahawk Lake on the MARC map.

Response: 7. The sentence has been changed as suggested.

Comment: 8. Figure 5, the future land use map does not include Tomahawk Lake and does not state the year that the map represents. The symbols of the legend are difficult to read.

Response: 8. Figure 5 has been redone to include the location of Tomahawk Lake and improve the symbols. No date is available for the exact year the map represents.

Comment: 9. In general Section IC-4 on existing fish and wildlife in the Indian Creek Basin is brief and incomplete. Data collected by Midwest Research Institute regarding the flora and fauna of the Blue River is available. The report also discusses various species of fish and wildlife which are considered to be rare or endangered by either Missouri, Kansas, and/or the U.S. Department of the Interior.

Response: 9. The section has been expanded as suggested.

Comment: 10. In Section IC-6 sentence changes are needed concerning Tomahawk Creek flow and river mile distance.

Response: 10. The sentences have been changed as suggested.

Comment: 11. Rewording of paragraphs in Section IC-6a discussing surface water records for Indian Creek and the Blue River.

Response: 11. The paragraphs have been reworded as suggested.

Comment: 12. The Blue River treatment plant and the Kansas River are drawn in the wrong locations on Figure 7.

Response: 12. Figure 7 has been corrected to show the correct locations of the Blue River treatment plant and the Kansas River.

Comment: 13. Rewording of sentence in Alternatives Section describing Plan B.

Response: 13. The sentence has been reworded as suggested.

Comment: 14. Legend symbols for Final improvements - Indian Creek STP and Phase I, Phase II, and Phase III Tomahawk Creek STP are identical. This should be corrected.

Response: 14. The legend symbols for Figure 8 are color differentiated in the Final Statement.

Comment: 15. In the description of proposed treatment facilities for the Tomahawk Creek Basin, the work "pulverization" should be substituted for comminution in the first sentence.

Response: 15. The work "comminution" is the proper term used in sanitary engineering to describe the process. For a general public unfamiliar with the term, the work "pulverization" has been included in parentheses immediately following comminution.

8. Agency: Mid-America Regional Council - MARC, Kansas City, Missouri

Comment: Enclosed is a copy of the recently published "Estimates and Projections - Kansas City metropolitan Region 1973". This report has revised estimates of regional growth trends based on latest U.S. census data. We recommend that the new projections be used in the EIS in place of the figure 630,000 population by 1990.

Response: The population figures of 377,411 persons in Johnson County year 2000 is used in the Final Statement Section IC-1.

9. Agency: United States Department of the Interior, Office of the Secretary, Washington, D.C. 20240

Comment: 1. The statement should include specific information on the type of surficial deposits to be excavated, as well as the proposed disposition of the 15,000 cubic yards of earth to be excavated. However, significant adverse impact related to geologic conditions is not anticipated.

Response: 1. The natural soils in the area formed insitu and they are not significant in depth or extent. The area in the county has not been subjected to inundation or glaciation. The 15,000 cubic yards of earth to be excavated will probably be used as fill-in the old Indian Creek channel.

Comment: 2. The ground water resources of the site are known and appear to have been adequately considered as to possible impact from expansion of the site.

Response: 2. Environment Protection Agency has no response to this comment.

Comment: 3. The statement should note that the Corps of Engineers is proposing to construct three flood-control reservoirs in the Blue River Basin which will be in the general area of sewage treatment plant. In addition to the two reservoirs mentioned another reservoir, Wolf-Coffee is also proposed. These three reservoirs will control approximately 46 percent of the Big Blue River Watershed above the U.S. Geological Survey gage .4 miles downstream from Indian Creek. The EIS does not consider the effects of releases from the Corps of Engineers reservoir projects during operation and maintenance.

Response: 3. Section I has been expanded to note the Wolf-Coffee Reservoir. Section IV A3.A has been expanded to relate effluent discharges to lake construction and operation.

Comment: 4. Precautions to protect the plant from peak stages estimated for a 100-year flood under present conditions have been considered. However as the drainage basins above the plants are only lightly urbanized at present, but developing rapidly, we suggest that the statement should further include consideration of the effects urbanization will have on flood flows and associated peak stages.

Response: 4. Tomahawk and Indian Lakes, if constructed, should alleviate flood problems at the treatment plant. The degree to which flood flows and associated peak stages will be affected by urbanization cannot presently be predicted. Should additional protection be necessary in the future, it will be provided.

Comment: 5. Section IV A.3.c. notes, "An increase in volume of effluent from 7 mgd to an average flow of 42.8 mgd will result in increased total loads to the stream. However, the concentration of organic and inorganic substances will be the same or less than is presently being discharged." These statements should describe in more detail how the heavier loads will result in lower concentrations or organic and inorganic substances and how this may affect stream quality.

Response: 5. Treatment efficiency of the present plant is estimated in the statement to be about 85% BOD5 removal and treatment efficiency of the ultimate plant expansion is estimated at 95% BOD_5 removal. In terms of BOD_5, total suspended solids and inorganic salts, a proportionate level of dilution (42.8 mgd) in combination with an increased treatment level will result in concentrations of organic and inorganic substances slightly less than those presently being discharged. Section IV A 3.c. has been expanded to better describe how loads will result in slightly lower concentrations of increased organic and inorganic substances.

Comment: 6. Section IV B1. states: "it may form a zone of degradation .... It seems logical that it will form a zone of degradation that will be greater than that which presently occurs." This should be further explained.

Response: 6. The statement has been changed to, "it may form a zone of degradation extending farther downstream than that which presently occurs. The exact length of the zone, however is difficult to predict at this time."

Comment: 7. Section V A. 1 states: "Ultimate effluent from the Indian Creek Sewage Treatment Plant Site, with three treatment plants, may degrade portions of Indian Creek to some extent, even though EPA promulgated water quality standards for the State of Kansas will not be violated." It seems that the alternate effluent will degrade portions of Indian Creek with a very good possibility that it may be worse than presently occurs. We feel this matter should be further discussed and explained.

Response: 7. The sentence has been amended to read, "The ultimate effluent from the Indian Creek site may form a zone of degradation in Indian Creek, although the Kansas Water Quality Standards will be met."

Comment: 8. Section I C.4 states: "There are no endangered or locally threatened plant or animal species in the country." Unpublished data gathered as a result of studies in connection with the Corps of Engineers projects does not agree with this statement. Three species of birds that are considered rare in the State of Kansas have been sighted in the area. These include the red-shouldered hawk, bald eagle and osprey. In addition, the project area is on the edge of the known range of the Indiana bat, a species that is included on the National Endangered Species List.

No specific data are available on the occurrence or abundance of this species in the drainage of the Blue River.

Response: 8. This section has been expanded as suggested.

Comment: 9. Page II-18 of the draft statement should be more explicit in describing the effects of discharges on the aquatic habitat.

Response: 9. Section II C.1.a. is intended to present comparisons of alternatives as to probable adverse environmental effects in very general summary form. The detail of discussion in paragraph (3) Receiving Stream Quality is comparable to that in paragraphs discussing other environmental parameters.

Comment: 10. In the discussion of Tomahawk and Indian Lakes, the statement notes, "An ultimate population of 140,000 with the construction of reservoirs, is expected..." It seems likely that construction of reservoirs within the urban area will not only hasten development of the surrounding area but result in an increase in population.

Response: 10. See U.S. Army Corps of Engineers, Kansas City District - Response No. 6.

Comment: 11. Figure 4 has not been annotated or interpreted to show land uses, and the reproduction is not sufficiently clear to permit an independent interpretation of this in parts of the area. The symbols of the legend on Figure 5 are difficult to interpret.

Response: 11. Figures 4 and 5 have been revised as suggested.

Comment: 12. The statement indicates in the Alternative Section that the "do - nothing" alternative would provide the opportunity for new developments to occur on either septic tanks or privately owned treatment plants of which neither are considered desirable. A possible solution to this problem may be to consider zoning to prohibit or control development as another alternative.

Response: 12. The EPA agrees. However, the responsibility for effective zoning lies within the jurisdiction of the local governments.

Comment: 13. The statement does not clearly confirm consultation with the State Historic Preservation Officer for the state involved. The final environmental impact statement should reflect that he was consulted to determine whether the proposal will affect any cultural site which may be in the process of nomination to the National Register of Historic Places and contain a copy of his response. Should the response reveal the presence of any cultural site that will suffer adverse impact as a result of the proposed action, a detailed plan for preservation should be compiled and included in the final EIS, along with an indication of arrangements that had been made to implement such a plan.

Response: 13. The subject statement was sent to the State Clearinghouse Officer and should have been reviewed by the State Historical Officer through that process. After receipt of the U.S. Department of Interior comments, EPA sent the statement directly to the State Historic Preservation Officer. His comments are included and responded to in the final statement.

Comment: 14. The statement should discuss the action taken or proposed to professionally determine the presence or absence of archeological resources in the project area and the effect of the proposal upon any such resources present. The EIS indicates that, "no unique archeological historic, scientific, or cultural areas will be affected" by construction of proposed interceptor sewers, but fails to reference the sources for this information. All areas to be disturbed by construction activities should be systematically inspected by a professional archeologist to determine the existence of presently unrecorded archeological remains. Should consultation and survey reveal the presence of significant sites, a detailed plan for mitigation through salvage excavation should be included in the Final Environmental Impact Statement, along with an indication of arrangements that have been made to implement such a plan. The statement should also further reflect procedures to be followed should previously unknown archeological resources be encountered during project development.

Response: 14. Section IV.D.1 has been amended to reflect the possibility that archeological sites may be affected by the construction of proposed interceptor sewers. The EPA grant for the proposed project will include stipulations for artifact preservation during construction activities. Should any artifacts be uncovered, the contractor will be alerted to contact an archeologist and appropriate plans for salvage excavation will be made.

10. Agency: Kansas State Historical Society, Topeka, Kansas

Comment: 1. It does not appear that there are presently any buildings or sites within the affected area which are in the process of nomination to the National Register of Historic Places.

Response: 1. EPA has no response to this comment.

Comment: 2. There is no specific data in regard to significant archeological sites which might be destroyed or damaged by the planned expansion. Because of the likelihood of the presence of archeological sites at the confluence of two streams we would recommend, that a preliminary survey be conducted by a trained archeologist to determine whether sites are present and that a professional appraisal be made of the significance of what is found.

Response: 2. The area of the treatment plant has been subject to considerable disturbance due to the past construction activities of man, and the chances of finding artifacts are very improbable. A letter to the Kansas State

Historical Society, dated December 20, 1973 (Appendix B, Page B-25) explains the EPA position on this point.

Comment: 3. There is the possibility that the relocation of the Indian Creek channel may expose deeply buried habitation levels. The contractor should be advised of this possibility and of the need to preserve and report such finds for investigation.

Response: 3. The contractor will be so advised.

11. Agency: Charles B. Wheeler, Jr., Mayor, Kansas City, Missouri

Comment: The Indian Creek Watershed of Missouri and Kansas, and the entire Blue River watershed of both states offer excellent potential for coordinated regional management, with a single waste treatment plant located at the mouth of the Blue River, rather than a series of plants proliferated throughout the basin, each discharging to a watercourse that flows through developed portions of the metropolitan area. Kansas City has proceeded with this objective, and through intergovernmental contracts, our sewerage system already serves the Blue River drainage areas of Independence, Raytown and Grandview, Missouri, the Indian Creek - Dykes Branch portion of Leawood, Kansas and the cities of Mission Hills and Westwood, Kansas. Any possibility of expanding our service area to include additional segments of the Kansas portion of the Indian Creek and Blue River drainage basins should be very fully explored. In my opinion, the regional system constitutes the only truly satisfactory long-term solution for the watershed. It is thought-provoking that Johnson County is planning substantial enlargement of its existing Indian Creek plant at about the same time Kansas City is preparing to construct its East Blue River interceptor up to Indian Creek.

What I consider essential is that present unsanitary conditions not be permitted to continue any longer than absolutely necessary. Your Impact Statement does not address this point. Your agency has not offered an educated guess regarding the best and quickest method for prevention of effluents into Indian Creek. I believe your agency should have compared regional planning effects with local.

Response: The EPA agrees with the idea of a single waste treatment plant located at the mouth of the Blue River as a long-term solution to waste treatment problems in both Kansas and Missouri. However, some means of handling waste loads from the Indian and Tomahawk Creek basins in the immediate future is presently necessary.

12. Agency: Donald S. Ballard, Mayor, City of Leawood, Kansas

Comment: At the September 17, 1973, meeting of the Leawood, Kansas City Council, the attached resolution was adopted. It was resolved that the Governing Body of the City of Leawood, Kansas, hereby opposes the expansion of the Indian Creek Plant and suggests the treatment and disposition of sewage can no longer be treated as a purely Johnson County problem, but rather as a metropolitan problem to be dealt with cooperatively on a bi-state area wide basis.

It is also my personal belief that effective waste water treatment is a metropolitan problem and as such requires a regional solution. A regional approach would allow functional consolidation of sewer districts on a watershed basis to achieve administration and treatment by area of need rather than the present system of fragmental administration by artifical political boundaries. In closing I would urge the EPA to recommend denial of the proposed Indian Creek Sewer Treatment Plant expansion and recommend waste water treatment through the Blue River Interceptor on a watershed basis.

Response: See Charles B. Wheeler, Jr., Mayor, Kansas City, Missouri response.

B. SUMMARY OF STATEMENTS AT PUBLIC HEARING HELD ON SEPTEMBER 20, 1973 FOR EXPANSION OF INDIAN CREEK SEWAGE TREATMENT PLANT, JOHNSON COUNTY, KANSAS

1. Edward C. Vest - Environmental Protection Agency

The five major provisions of Section 102(2)(c) of the National Environmental Policy Act on the preparation of environmental impact statements were listed. A brief history of the grant application for the project and the subsequent preparation of the environmental impact statement was given. The general plan for the plant site along with six alternatives was presented.

2. Jack Burris - Kansas State Department of Health

Plan A - the expansion of the Indian Creek Plant and the construction of the Tomahawk plant with discharge to Indian Creek to include advanced waste treatment for dry-weather flows and secondary treatment for wet-weather flows was favored. Mr. Burris said that his agency did not favor those alternatives involving exportation from the basin because the benefits derived would not be commensurate with the costs.

Indian Creek should not be classified as a Class A stream: Mr. Burris declared his agency did not plan to change the classification of Indian Creek from Class B to Class A and urged the Environmental Protection Agency not to do so.

A possible long-range goal for wastewater disposal from the Indian Creek and Tomahawk Creek basins could be a cooperative agreement with Kansas City, Missouri for a sewer down the Blue River valley to a treatment plant located near and discharging to the

Missouri River.

3. Joseph W. Fitzpatrick - Missouri Clean Water Commission

Mr. Fitzpatrick read a statement prepared by Jack K. Smith, Executive Secretary of the Missouri Clean Water Commission:

a. Reference was made to a previous letter explaining the objection of the Missouri Clean Water Commission to the expansion of the plant with the recommendation that future planning include the elimination of discharge to Indian Creek.

b. The Draft Environment Impact Statement did not disclose measures to prevent overloading of the plant. The impact statement should cover those interim measures to be taken to prevent overloading as the problem could become very critical between now and the planned 1976 expansion.

c. Odor problems from the present plant site were not fully evaluated.

4. Donald S. Ballard - Mayor of the City of Leawood

Mr. Ballard presented a resolution passed at a recent city Council meeting (Resolution No. 293) which opposed the expansion of the Indian Creek Plant and suggested that the treatment and disposition of sewage be treated not just as a Johnson County problem but as a metropolitan problem to be dealt with cooperatively on a bi-state areawide basis.

Mr. Ballard then read from a statement of his own: Parts of the sanitary sewer system operated by the City of Leawood were overloaded and occasionally caused pollution of adjacent creeks. The apparent solution open to Leawood was to build additional line capacity parallel to existing lines. However, lines could not be built until additional flow capacity was made available on the Missouri side of the State Line since the Leawood effluent is treated by Kansas City, Missouri. If the Indian Creek treatment facility was not expanded, then effluent from Tomahawk Creek and Indian Creek basins could be transported to the same Missouri River location as the effluent from the Leawood Sewer System. The additional economic support which the Indian Creek and Tomahawk Creek basins would contribute to assist in the construction of the Big Blue Interceptor line was the only good, long-term solution for development in these two basins. The citizens of Leawood did not consider the current location of the Indian Creek facility to be acceptable as a permanent treatment site because of water and air pollution and would do everything possible to prevent any further expansion and to ultimately force abandonment of the site.

In the concluding paragraphs of his statement, Mr. Ballard urged the Kansas State Health Department and the EPA to make every effort to insure the creation of a bi-state authority to properly plan waste treatment for the areas involved.

5. Mr. George E. Walls - South Leawood Improvement Association

Mr. Walls presented for the record (a) a petition signed by the citizens of Leawood strongly opposing the further expansion of the Indian Creek Facility; (b) a transcript of a council meeting January 1967, in which the citizens of Leawood were tentatively promised that the Indian Creek facility would not be expanded beyond 70,000 P.E.; and (c) a notice of hearing to enlarge the boundaries of Indian Creek Sewer Subdistrict No. 2, Indian Creek Main Sewer District No. 1 and Indian Creek Consolidated District No. 1, first published in the Johnson County Sun, Wednesday, September 19, 1973.

6. Douglas J. Patterson - Kansas City Home Builders Association

Mr. Patterson suggested that an orderly timetable for the expansion of the present Indian Creek treatment facility was needed for the growth of very fertile development property. He cited figures which indicated that the current delay of this project from May 1971 to 1973 had already increased the project price by $27,380. The problem of odor was discussed and tentatively blamed on the overloading of the present 70,000 E. plant.

Mr. Patterson stated that the environmental impact statement called only for adoption of Phase 1, improvement of the existing facilities. He noted that odors would be held to a minimum level during Phase 1 and indicated that odor restrictions would be involved in Phase 2 development. As the present environmental impact statement did not concern plant expansion to Phase 6, adoption of the project was endorsed.

7. Tom Neal - Mid-America Regional Council

Mr. Neal indicated the present position of the Council on the project was stated in the environmental impact statement. Any new statements would be forthcoming after completion of a present water quality criteria study.

8. John J. Ruddy - J. C. Nichols Company

The September 5, 1973 EIS was considered to be an objective and factual evaluation of the various problems surrounding the proposed project. The project was stated to be limited to improvements at the existing site without involvement of additional treatment facilities.

However, reasonable evaluation of the EIS supported approval of the proposed project as well as expansion when justified by future development. The proposed project is recommended for the following reasons: (a) geographic and topographic (b) no additional land acquisition necessary (c) initial project phases will result in improved operation of existing plant (d) channel relocation should result in a reduction of odor problems (e) means are available to control and minimize odors (f) Plan A - ultimate plant expansion - is the most cost - effective and has the second lowest possible adverse environmental effect (g) Plan A has the lowest first costs and should therefore be implemented first.

9. James J. Butler, Jr. - First Land Investment Company

Mr. Butler said that he and his clients felt that to restrict the expansion of the waste treatment plant was to restrict the growth of the city of Overland Park and Johnson County southward. The First Land Investment Company would file a petition with Johnson County for the immediate sewering of a 750 acre area in the Indian Creek Valley.

10. James C. Garland - Garland Development Company

In January 1972, the Garland Development Company along with other developers joined to form a sewer district that has since been delayed pending the construction of Tomahawk Dam and approval of the improvements at the Indian Creek Sewage treatment plant facility. Improvements at the existing facility were recommended because alternate methods of solving the sewage problem were not believed to be financially feasible.

11. Dr. G. M. Osgood - Private citizen of Leawood, Kansas

Dr. Osgood declared that the existing sewage treatment plant has emitted odors or "stunk" ever since it has been in operation. A cesspool was being built in the middle of Leawood for Overland Park and a few other places because that was the cheapest way to do it. Dr. Osgood urged the Environmental Protection Agency to give consideration to the thousands of people who would have to smell the expanded plant and to be sure that sewage planning is done on a long-range basis and not on a short-term, large septic tank basis.

12. E. E. Alt - Councilman. City of Leawood, Kansas

Mr. Alt read a prepared statement which was entered into the record. The statement noted that approximately 35% and 55% of the land within one-half mile and one mile, respectively, of the present treatment plant is presently projected for residential use. Odor problems were cited and at its ultimate capacity, the plant will treat sewage from approximately 45,500 acres with about 12% of this acreage being in the city of Leawood. Mr. Alt realized that the treatment of sewage from Overland Park and Prairie Village and the Foxcroft area in Missouri which connects into the James Branch in Leawood was not included in the proposed plan.

Mr. Alt concluded his statement by calling for a solution to the sewage disposition problem to be undertaken on an areawide basis requiring the joint cooperation of the cities in the metropolitan area and the two states encompassing the area as well.

13. John H. Morse, Hearing Officer, read a statement from the League of Women Voters of Johnson County.

The League did not presently oppose the particular improvement. However, the future expansion of the plant raised some question regarding water and air quality and land use. The population density figures in the EIS are questioned in light of Overland Parks increased zoning permits for shopping centers and multi-dwellings. The League supported the strong 1977 and 1983 water effluent limitations and wanted these strict standards upheld for Indian Creek. The statement also urged that every effort be made to ensure that overloading of the plant would not violate future, more stringent water and air quality standards.

A short period of open discussion then followed. Dr. Osgood addressed a question to the representatives of Black and Veatch Consulting firm that designed the expansion of the Indian Creek Treatment Plant. The question concerned any plans to control odors from the expanded plant. Mr. Weller of the firm assured Dr. Osgood that if the plant is expanded to the 110,000 P.E., additional safeguards to control odor would be considered. However, detailed design studies for odor prevention had not been worked out at present. Mr. Walls added that he believed the plant is now in an overloaded condition and that no one could guarantee that there would not be an odor emission from the expanded facility. He also noted that in circulating petitions, he discovered many homeowners in Leawood had not been aware of the existence of a sewage treatment plant so near their residences at the time of purchase.

14. Bill Boggess - Private citizen of Mission, Kansas

Mr. Boggess blamed the city of Leawood itself for lack of foresight to have allowed development in an area so near to a sewage treatment plant.

Mr. Walls responded to Mr. Boggess comment by noting that the residential area and treatment plant did not become a part of the City of Leawood until March 15, 1965 at which time both the residences and the sewage treatment plant were well-established. Mr. Alt wanted to ask those against improvement of the facility where the money for the other alternatives would come. Mr. Walls responded that those who buy land in the future should be aware of a charge for sewage treatment. He concluded that responsibility for land improvement south of I-435 was not the City of Leawood's problem. Mr. John Morse, Hearing Officer, then closed the hearing.

The full transcript of this hearing including exhibits and statements is available for inspection at the Environmental Protection Agency, Region VII, 1735 Baltimore, Kansas City, Missouri.

C. CONCLUSIONS AND RECOMMENDATIONS

All comments submitted in writing and expressed at the Public Hearing were carefully considered.

Comments from the Mayor of Leawood, the Mayor of Kansas City, Missouri, the Kansas State Department of Health, and several other comments at the Public Hearing on September 20, 1973, suggested a regionalization plan in which wastes from the Indian and Tomahawk Creek Basins would ultimately be transported via a Blue River Interceptor to the Blue River treatment Plant in Kansas City, Missouri. Also, the citizens of Leawood, Kansas, expressed opposition to further expansion of waste treatment facilities at the present Indian Creek treatment Plant site because of future odor problems.

It appears that the long-range solution for waste treatment needs of Indian Creek and Tomahawk Creek Basins is Plan D or transportation of dry weather flows from the Indian Creek and Tomahawk Creek Basins to the Kansas City, Missouri, Blue River Sewage treatment plant for secondary treatment. Wet weather flows would receive secondary treatment at the Indian Creek site and be discharged to Indian Creek. The governments of Johnson County, Kansas, and Kansas City, Missouri, have not yet reached an agreement on this matter, and an interceptor is planned but not presently available. Therefore, improvements or an expansion to effect increased effeciencies as required to accommodate anticipated loads will be allowed as an interim measure until adequate sewer facilities are available to transport the waste to the Kansas City, Missouri, Blue River Treatment Plant. In addition, Project C200381, for site improvements is approved to the extent required to accommodate the interim improvements or expansion.

APPENDIX A

MIDWEST RESEARCH INSTITUTE DATA ON FAUNA AND ARCHAEOLOGICAL STUDIES OF THE BLUE RIVER BASIN

IX. REFERENCES

1. Report on Sewerage Study for Tomahawk Creek Basin, Johnson County, Kansas. Black & Veatch Consulting Engineers, Kansas City, Missouri, 1970.
2. Black and Veatch Consulting Engineers, letter to Johnson County, Kansas Indian Creek Main Sewer District No. 1.
3. Report of Kansas State Board of Agriculture, Volume 67, June 1948, No. 285.
4. Social, Economic and Environmental Assessment of the Blue River Basin, Vicinity of Kansas City, Missouri and Kansas - Corps of Engineers, Kansas City District.
5. Geology and Ground-Water Resources of Johnson County - Northeastern Kansas, Howard G. O'Conmer, Bulletin 203, 1971.
6. Water Resources Data for Kansas, 1971, Part 1.
7. Water Resources Data for Missouri, 1972, Part 1,
8. Comprehensive Area-Wide Water and Sewer Plan for Johnson County, Kansas

TABLE A-1

AMPHIBIANS AND REPTILES IN THE BLUE RIVER BASIN

Salamanders : mudpuppy

Toads and Frogs : American toad, Rocky Mountain toad, Blanchard's cricket frog, western chorus frog, eastern gray tree frog, bullfrog, leopard frog, western narrow-mouthed toad, and plains spadefoot toad.

Turtles : common snapping turtle, ornate box turtle, western painted turtle, red-eared turtle, smooth soft-shelled turtle

Lizards : ground skink, northern prairie skink, great plains skink, five-lined skink, six-lined racerunner, western slender glass lizard

Snakes : western worm snake, prairie ringneck snake, eastern hog-nosed snake, western smooth green snake, rough green snake, eastern yellow-bellied racer, great plains rat snake, black rat snake, bull snake, prairie king snake, speckled king snake, red milk snake, northern flat-headed snake, blotched water snake, Graham's water snake, diamond-backed water snake, northern water snake, midland and Texas brown snake complex, red-bellied snake, western earth snake, western plains garter snake, red-sided garter snake, western ribbon snake, northern lined snake, northern copperhead, timber rattlesnake

TABLE A-2

BIRDS FOUND IN THREE HABITAT TYPES OF THE BLUE RIVER BASIN

Cropland	Fallow Field	Bottomland Forest
Bobwhit	Bobwhite	Red-tailed hawk
Killdeer	Ring-necked pheasant	Red-bellied woodpecker
Ring-necked pheasant	Mourning dove	Red-headed woodpecker
Rock dove (pigeon)	Chimney swift	Yellow-billed cuckoo
Mourning dove	Eastern kingbird	Yellow-shafted flicker
Chimney swift	Barn swallow	Pileated woodpecker
Horned lark	Purple martin	Hairy woodpecker
Barn swallow	Mockingbird	Downy woodpecker
Purple martin	Brown thrasher	Great crested flycatcher
Common crow	Eastern bluebird	Eastern wood pewee
Starling	Loggerhead shrike	Blue jay
House sparrow	Bell's vireo	Common crow
Eastern meadowlark	Yellowthroat	Black-capped chickadee
Western meadowlark	Yellow-breasted chat	Tufted titmouse
Red-winged blackbird	Eastern meadowlark	White-breasted nuthatch
Common grackle	Western meadowlark	House wren
Brown-headed cowbird	Red-winged blackbird	Carolina wren
	Orchard oriole	Catbird
	Brown-headed cowbird	Robin
	Cardinal	Wood thrush
	Dickcissel	Eastern bluebird
	American golfinch	Blue-gray gnatcatcher
	Lark sparrow	Starling
	Chipping sparrow	Red-eyed vireo
	Field sparrow	Kentucky warbler
		House sparrow
		Baltimore oriole
		Brown-headed cowbird
		Summer tanager
		Cardinal
		Rose-breasted grosbeak
		Indigo bunting
		Rufous-sided towhee

TABLE A-3

LIST OF MAMMALS POTENTIALLY INHABITATING THE BLUE RIVER BASIN

Order	Common Name
Marsupialia	Opossum
Insectivora	Short-tailed shrew
	Little short-tailed shrew
	Eastern mole
Chiroptera	Indiana bat
	Small-footed myotis
	Gray bat
	Keen's bat
	Big myotis
	Eastern pipistrelle
	Big brown bat
	Evening bat
	Silvery-haired bat
	Hoary bat
	Red bat
	Brazilian free-tailed bat
Lagomorpha	Eastern cottontail
	Black-tailed jackrabbit
Rodentia	Eastern gray squirrel
	Eastern fox squirrel
	Woodchuck
	13-lined ground squirrel
	Franklin's ground squirrel
	Chipmunk
	Southern flying squirrel
	Plains pocket gopher
	Beaver
	Plains harvest mouse
	Western harvest mouse
	Deer mouse
	Wood's mouse
	Hispid cotton rat
	Eastern wood rat
	Muskrat
	Lemming mouse

TABLE A-3 (Concluded)

Order	Common Name
	Pine vole
	Prairie vole
	House mouse
	Norway rat
	Meadow jumping mouse
Carnivora	Coyote
	Gray fox
	Red fox
	Raccoon
	Long-tailed weasel
	Mink
	Badger
	Striped skunk
	Spotted skunk
	River otter
	Bobcat
Artiodactyla	White-tailed deer

TABLE A-4

LIST OF FISHES COLLECTED IN THE BLUE RIVER AND SEVERAL TRIBUTARIES APRIL 1973

Family and Species		Indian Creek				Tomahawk Creek		Wolf Creek		Coffee Creek		Mill Creek	Blue River	
		1	2	3	4	1	2	1	2	1	2	1	1	2
ȷyprinidae														
Stoneroller	Campostoma anomalum			*	*	*	*	*	*	*	*	*	*	*
Golden shiner	Notemigonus crysoleucas												*	*
Red shiner	Notropis lutrensis	*	*	*	*	*	*	*	*	*	*	*	*	*
Sand shiner	Notropis stramineus			*	*	*	*		*	*			*	*
Redfin shiner	Notropis umbratilis				*			*	*	*	*		*	*
Suckermouth minnow	Phenacobius mirabillis							*		*	*		*	*
Bluntnose minnow	Pimephales notatus							*	*	*	*		*	*
Fathead minnow	Pimephales promelas	*	*	*	*	*	*	*	*	*		*		*
Creek chub	Semotilus atromaculatus		*	*				*	*	*	*	*	*	
Catostomidae														
White sucker	Catostomus commersoni			*	*		*			*	*	*	*	*
Ictaluridae														
Black bullhead	Ictalurus melas	*	*	*		*	*	*	*	*				*
Yellow bullhead	Ictalurus natalis	*	*				*				*			
Slender madtom	Noturus exilis			*		*	*	*	*		*		*	*
Centrarachidae														
Green sunfish	Lepomis cyanellus	*	*	*	*	*	*	*	*	*	*	*	*	*
Orangespotted sunfish	Lepomis humilis		*	*			*	*	*	*			*	
Bluegill	Lepomis macrochirus		*					*	*	*	*		*	*
Hybrid sunfish	Lepomis - - -					+	+			+				
Largemouth bass	Micropterus salmoides	*	*				*		*	*	*	*	*	*
White crappie	Pomoxis annularis									*				*
Percidae														
Johnny darter	Etheostoma nigrum												*	*
Orangethroat darter	Etheostoma spectabile								*	*	*		*	
Logperch	Percina caprodes									*	*		*	*
Number of species (21)		6	9	10	7	7	11	12	14	17	14	7	17	17

Note: * = the species taken at that station.
+ = presence of hybrid sunfish.

G. Cultural Resources

1. Archaeological remains:

a. General: Archaeological resources have not been previously studied in the Blue River Basin in the areas of the proposed projects. The area of the proposed lakes and channel improvements are in only the initial stages of study for the location and identification of archaeological remains. Known sites are, for the most part, known because local amateur collectors have recorded the places where prehistoric artifacts are found with state data repositories. These repositories were available for this study and new data were gathered from field studies.

Numerous studies of the archaeological resources of the Metropolitan Kansas City Area are available,[252-254] and results of studies centered around other construction projects are becoming available, each relating to a specific set of requirements.[255,256] None are available for the specific area encompassed by the four lakes and channel modification of the Blue River from its confluence with the Missouri River upstream to the vicinity of 63rd Street.

Archaeological remains observed indicate that the proposed Basin projects involve sites which date from at least the Archaic period through late Woodland to possibly Mississippian period times (Steed-Kisker locally). No specimens relating to the Nebo Hill culture[252] were observed, although these could be present. Locations for such sites would not normally be involved in this project, although development of surrounding hillsides for recreation could affect such a site. Time periods involved would range from 1500 B.C. through A.D. 1400[257] (see Table 51). In nearby areas such as the Truman Reservoir and along the Missouri River, remains that are at least 10,000 years old are known. From the located sites in the project areas, there is little reason to believe that numerous additional sites are not present and would be found through systematic surface reconnaissance and testing.

One major objective of the limited primary field survey is to verify that there are archaeological sites in the project areas which would permit projection of needed survey and excavation from a more solid position.

Archaeological research in the project area has previously been limited to ancillary reconnaissance by archaeologists involved in other projects, specifically a highway salvage archaeological project in addition to student questioning of informant-collectors in the area. Prior to the initial archaeological survey herein undertaken, no systematic evaluation of the area was attempted, and no attempt to gather the available data made.

TABLE 51

COMPARISON OF TIME PERIODS WITH MISSOURI HANDBOOK TERMINOLOGY

Tradition	Period	Missouri Handbook Terminology
Village Farmer	Late Mississippi A.D. 1450-1700	The Prairie Dwellers: Proto-Historic Period
	Early Mississippi A.D. 900-1450	The Townspeople: Mississippi Period
Prairie-Forest Potter	Late Woodland A.D. 400-900	The Regional Isolationists Late Woodland Period
	Middle Woodland 500 B.C.-A.D. 400	The Traders: Middle Woodland Period
	Early Woodland 1000-500 B.C.	The First Potters: Early Woodland Period
Forager	Late Archaic 3000-1000 B.C.	The Foragers; Hunter-Gatherers of the Archaic Period
	Middle Archaic 5000-3000 B.C.	
	Early Archaic 7000-5000 B.C.	
Hunter-Forager	Dalton 8000-7000 B.C.	Missouri's First Explorers: Early Hunter Period
Early Hunter	Paleo-Indian 12000-8000 B.C.	(same as above)
Unspecialized Hunter Gatherer	Early Man (?) - 12000 B.C.	The Earliest Americans

Along the area of channel modification and the Mill Creek Lake, site data are located in the Archaeological Survey of Missouri located at the University of Missouri at Columbia; and in the reservoirs in Kansas, data are located in repositories at the Kansas State Historical Society, Topeka, and the Department of Anthropology, Museum of Natural History, University of Kansas, Lawrence. Additional collections of materials are held by local individuals.

Primary field examination encompassed 4 days for the present evaluation. Only limited information could be assembled in that time, and it is presented here.

b. Description of sites: The designation of archaeological sites follows the numbering system originally employed by the Smithsonian Institution and also by the Archaeological Survey of Missouri, the University of Kansas, as well as the Kansas State Historical Society. In Missouri, the Archaeological Survey alone numbers sites, while in Kansas, several institutions cooperate in assigning number designations to sites for record keeping. Sites are coded by numbers and letters that identify the state, county, and number of the site in the county. Sites in Missouri are numbered 23 (alphabetical listing of states, not including Alaska and Hawaii, which were made states after the numbering system began and are 49 and 50, respectively), while sites in Kansas begin with 14. Counties are coded by a two letter abbreviation and in this project, the following counties are abbreviated as follows: Kansas--Johnson=JO; Missouri--Jackson=JA.

Each site in a county is assigned a unique number, for example, a site located on the dam axis of Wolf-Coffee Lake is 14JO 42 which indicates 14 (Kansas), JO (Johnson County), and 42 (the 42nd site in Johnson County).

Varieties of site types exist and range from open campsites and village sites to rock shelters, caves and mortuary sites such as mounds and rock cairns. Of the located sites in the project area, all are open sites, most classified as campsites because of their limited total area. Other site types may be found upon intensive survey.

(1) Wolf-Coffee Lake: Two locations are listed for Wolf-Coffee Lake and others surely exist.

Number	Site Type	Cultural Affiliation
14JO 42	Campsite	Uncertain
14JO 43	Campsite	Woodland

14JO 42 is located near Coffee Creek. Chert chips and burned rock are visible along a rise which runs from the creek to the hillside to the north. 14JO 43 is also located near Coffee Creek. Cultural debris found eroding out of a bank at the creek suggests that the site is buried about 1 ft below the present surface. Cultural affiliation based on projectile point typology is woodland.

The terrain of this lake appears to be such that additional archaeological resources would be found in intensive survey. Land grading for construction could alter the condition of the archaeological sites present, however.

(2) Indian Lake: Archaeological sites are located above and below the limits of this proposed lake, although none are known precisely within the flood pool of the project. Six numbered sites are listed. Their location leads us to suspect that access to the land for collecting has been limited in the past. Following is a list of sites known to occur immediately above and below the proposed Indian Lake:

Number	Site Type	Cultural Affiliation
14JO 38	Campsite	Unknown
14JO 311	Campsite	Woodland
14JO 312	Campsite	Woodland and later
14JO 313	Campsite	Woodland
14JO 314	Campsite	Archaic-Woodland
14JO 315	Campsite	Unknown

All of the above sites are located on terrace remnants of Indian Creek and are identified by the presence of chert artifacts, pottery, burned rock and other chert (flakes, cores, etc.). Much of the proposed lake land is in soil bank, and is fallow at this time. Systematic survey of the project site would reveal undiscovered archaeological resources.

(3) Tomahawk Lake: Two archaeological sites are numbered in this lake (14JO 41 and 14JO 310). One (14JO 41) was probably destroyed during construction of an interchange of U.S. 69 and Kansas 150 highways, since it could not be located. The other numbered site (14JO 310) is near the dam axis of proposed Tomahawk Lake.

Number	Site Type	Cultural Affiliation
14JO 41	Village	Archaic-Woodland
14JO 310	Campsite	Archaic-Woodland

14JO 41 should be searched for when ground cover is low and tested, in that the cultural affiliation seems to be late Archaic-Early Woodland and could offer insight to the early ceramic sequence in the Kansas City Metropolitan Area. It would be inundated only in maximum flood pool level. 14JO 310 - This site has produced large quantities of lithic and ceramic debris and artifacts which indicate that considerable habitation was present. It is located on the left bank of Tomahawk Creek on terrace remnants which appear as small mounds. It is not known if this site extends below the plow zone and is undisturbed. It would be quite near, if not included, in the dam axis of the lake.

(4) Mill Lake: No archaeological sites have been positively identified within the limits of Mill Lake, although there are known sites less than a mile away on the Blue River. Several possible locations were found although land access was difficult. Since this lake is little different than the other proposed lakes, it is expected that archaeological remains will be found in this area upon survey. No sites are numbered in the Archaeological Survey of Missouri from this area.

(5) Blue River Channel Modification: Three known archaeological sites lie within the proposed channel modification area of the Blue River from approximately 63rd Street to the confluence with the Missouri River.

Number	Site Type	Cultural Affiliation
23JA 18	Campsite	Unknown
23JA 58	Village	Archaic-Mississippian
23JA 67	Campsite	Archaic-Mississippian

APPENDIX B

GENERAL INFORMATION

28-16-28. WATER QUALITY CRITERIA FOR INTERSTATE AND INTRASTATE WATERS OF KANSAS. Water quality criteria are listed herein for all surface waters of the state, both interstate and intrastate, including all tributary watercourses. All waters of the state whose existing quality is better than the applicable water quality criteria as established herein as of the date the water quality criteria become effective will not be lowered in quality until it has been determined by the Kansas State Board of Health that the change is justifiable as a result of necessary social and economic development and that all beneficial uses of waters affected will not be impaired. In no case shall the quality of waters of the state be reduced below the quality criteria as established herein.

I. Water Use Classification.

Water use classifications for all waters of the state are listed in section IX of the criteria. Water uses are grouped into the following two categories:

A. Class A waters shall be protected for the following water uses:

1. Body contact recreation. These waters are intended for uses where the human body may come in direct contact with the raw water to the point of complete submergence with the possibility of ingestion, such as swimming, water skiing, and skin diving.

2. The preservation and propagation of desirable species of fresh warm water aquatic biota, semi-aquatic life, waterfowl, and wildlife.

3. Public water supply.

4. Industrial water supply.

5. Agricultural purposes.

B. Class B waters shall be protected for the following water uses:

1. Secondary contact recreation. These waters are intended for uses such as fishing, wading, boating or other activities where ingestion of the water is not probable.

2. The preservation and propagation of desirable species of fresh warm water aquatic biota, semi-aquatic life, waterfowl, and wildlife.

3. Public water supply.

4. Industrial water supply.

5. Agricultural purposes.

II. Treatment Requirements

A minimum of secondary treatment shall be provided for all municipal wastes by July 1, 1977. Best practicable control technology currently available shall be applied to all industrial wastes by July 1, 1977. The objective of treatment or control will be to reduce the organic load, oil, grease, solids, alkali, acids, toxic materials, color and turbidity, taste and odor products, and other deleterious materials to the lowest practicable level.

Seasonal disinfection (April 1 through October 31) of treated wastes shall be provided for those municipalities or industries which contribute bacterial loadings to rivers or streams which are tributary to waters used for body contact recreation, and which waters are within the zone of bacterial influence.

III. Flow Criteria

The water quality criteria for all waters shall apply at all times except during periods when streamflows are less than the average minimum seven-day low flow which occurs once in ten years, or when stream flow is less than 1 cfs, whichever value is greater. Quality criteria will be met insofar as is practicable when streamflows are less than those stipulated.

IV. Mixing Zones

The water quality criteria listed herein shall apply below the mixing zone for each individual discharge. The total area and/or volume of a receiving stream assigned to mixing zones shall be limited to that which will: 1) not interfere with biological communities or populations of important species to a degree which is damaging to the ecosystem; and 2) not diminish other beneficial uses disproportionately.

V. Zones of Passage

Zones of passage must be provided in streams, reservoirs, or lakes wherever mixing zones are allowed, and such zones shall be continuous water routes of the volume, area, and quality necessary to allow passage of free-swimming and drifting organisms with no significant effects on their populations. Because of varying local physical and chemical conditions and biological phenomena, no single value can be given on the percentage of river width necessary to allow a sufficient zone of passage. As a guideline, mixing zones should be limited to no more than 1/4 of the cross-sectional area and/or volume of flow of a stream or reservoir, leaving at least 3/4 free as a zone of passage.

VI. Analytical Testing

All methods of sample collection, preservation, and analysis used in applying any of the rules and regulations in these standards shall be in accord with those prescribed in "Standard Methods for the Examination of Water and Wastewater", thirteenth edition, or other methods acceptable to the Board.

VII. General Criteria

The cumulative effect of waste discharges to waters of the state will be guided by the 1962 U.S. Public Health Service drinking water standards. Pollutional substances contributed by man-made point source waste discharges shall be maintained below maximum permissible concentrations which would be detrimental for public water supplies, the preservation and propagation of desirable diversified aquatic life, recreational requirements, agricultural needs, industrial needs, and other established beneficial use. All waters shall be controlled so that public health hazards or nuisance conditions will not develop due to man-made point source discharges.

VIII. Specific Criteria

A. Bacteria

1. In Class A waters, the fecal coliform content based on not less than five samples taken during separate 24-hour periods over not more than a 30-day period, shall not exceed a geometric mean of 200 per 100 ml sample, nor shall more than 10 percent of total samples during any 30-day period exceed 400 per 100 ml sample.

2. In Class B waters, the fecal coliform content shall not exceed 2,000 per 100 ml sample.

It is recognized that the bacterial criteria for Class A and B waters will be violated as a result of contributions from natural non-point sources during periods when those waters are being influenced by surface runoff.

B. Dissolved Oxygen

1. In Class A waters, the dissolved oxygen content shall be maintained at or above 5 mg/l. Dissolved oxygen concentrations less than 5 mg/l shall not be due to man-made point source waste discharges.

2. In Class B waters, the dissolved oxygen content shall be maintained at or above 5 mg/l (except for 4 mg/l for short periods of time within a 24 hour period). Dissolved oxygen concentrations less than the above levels shall not be due to man-made point source waste discharges.

C. Temperature

Man-made point source discharges shall not elevate the temperature of the receiving water above 90°F. Heat of artificial origin shall not be added to a stream in excess of the amount that will raise the temperature of the water more than 5°F above natural conditions. The epilimnion of lakes shall not be raised more than 3°F above that temperature which existed before the addition of heat of artificial origin. The normal daily and seasonal temperature variations before the addition of heat due to other than natural causes should be maintained. The measurement system used in each case should provide for temperature measurements which reflect the temperature differential induced after a reasonable mixing zone. A zone of passage for free-swimming and drifting aquatic biota must be provided for the water affected by each discharge.

D. pH

Man-made point source waste discharge shall not cause the pH of waters of the state to vary below 6.5 nor above 8.5.

E. Ammonia

Man-made point source waste discharge shall not cause the undissociated ammonium hydroxide concentration of waters of the state to exceed 0.15 mg/l as N.

F. Oil and Grease

All waters shall be essentially free of visible oil and grease. Dissolved or emulsified grease concentrations shall be kept below levels which will interfere with established beneficial use.

G. Solids

There shall be no man-made deposits of solids in waters of the state, either organic or inorganic, which will be detrimental to established beneficial use. All waters shall be free of floating debris, scum, and other floating materials attributable to municipal, industrial, or other waste disposal practices in amounts sufficient to be unsightly or detrimental to established beneficial use.

H. Turbidity

There shall be no turbidity increase in waters of the state, of other than natural origin, that will cause substantial visible contrast with the natural appearance of the water or be detrimental to established beneficial use.

I. Taste and Odor Producing Substances

Taste and odor producing substances from man-made point sources shall be limited to concentrations in the receiving water that will not interfere with the production of potable water by reasonable water treatment processes, or impart unpalatable flavor to fish, or result in noticeable offensive odors in the vicinity of the water, or otherwise interfere with established beneficial use of the water.

J. Color

Man-made point source discharges of color producing substances shall be limited to concentrations which will not be detrimental to established beneficial use of the receiving water.

K. Toxic Substances

Toxic substances or synergistic effects of toxic substances from man-made point sources shall be limited to concentrations in the receiving water that will not be harmful to human, animal, plant or aquatic life, or otherwise interfere with established beneficial use of the water.

IX. Designation of Water Uses

All watercourses which reach zero natural flow annually are exempted from water use classification and the application of water quality criteria, except: 1) those waters specifically listed in the following table, and 2) those waters that can be reasonably expected to support aquatic wildlife because of pooling during periods of no flow.

Unlisted tributary watercourses which are perennial or which can be reasonably expected to support aquatic wildlife because of pooling during periods of no flow shall be classified as Class B waters.

Waters	Water Use Class
Neosho River Basin	
Neosho River	B
John Redmond Reservoir	A
Council Grove Reservoir	A
Cottonwood River	B
Marion Reservoir	A
Chase County State Lake	A
Spring River	B
Shoal Creek	B
Verdigris River Basin	
Verdigris River	B
Toronto Reservoir	A
Fall River	B
Fall River Reservoir	A
Elk River	B
Elk City Reservoir	A
Montgomery County State Lake	A
Wilson County State Lake	A
Woodson County State Lake	A
Caney River	B
Caney Creek	B
Little Arkansas River Basin	
Little Arkansas River	B
Lower Arkansas River Basin	
Arkansas River below Walnut Creek	B
Ninnescah River	B
North Fork Ninnescah River	B
Cheney Reservoir	A
South Fork Ninnescah River	B
Kingman County State Lake	A
Rattlesnake Creek	B
Cow Creek	B
Chikaskia River	B
Medicine Lodge River	B
Salt Fork Arkansas River	B

Upper Arkansas River Basin

- Arkansas River above Walnut Creek --------------- B
  - Kearny County State Lake ------------------- A
  - Pawnee River ------------------------------- B
  - Walnut Creek ------------------------------- B

Walnut River Basin

- Walnut River -------------------------------------- B
  - Whitewater River -------------------------- B

Cimarron River Basin

- Cimarron River ----------------------------------- B
  - North Fork Cimarron River ----------------- B
- Crooked Creek ------------------------------------ B
  - Meade County State Lake ------------------- A

Smoky Hill River Basin

- Smoky Hill River --------------------------------- B
  - Scott State Park Lake --------------------- A
  - Cedar Bluff Reservoir --------------------- A
  - Kanopolis Reservoir ----------------------- A
  - Big Creek --------------------------------- B
  - Chapman Creek ----------------------------- B

Upper Republican River Basin

- South Fork Republican River -------------------- B
- Arikaree River ----------------------------------- B
- Beaver Creek ------------------------------------- B
- Sappa Creek -------------------------------------- B
- Prairie Dog Creek -------------------------------- B
  - Norton Reservoir -------------------------- A

Solomon River Basin

- Solomon River ------------------------------------ B
  - Waconda Lake ------------------------------ A
  - North Fork Solomon River ------------------ B
    - Kirwin Reservoir ---------------------- A
  - South Fork Solomon River ------------------ B
    - Webster Reservoir --------------------- A
  - Ottawa County State Lake ------------------ A

Lower Republican River Basin

- Republican River ---------------------------------- B
    - Milford Reservoir -------------------------- A
    - Lovewell Reservoir ------------------------- A

Big Blue River Basin

- Big Blue River ---------------------------------- B
    - Tuttle Creek Reservoir --------------------- A
    - Little Blue River ---------------------------- B
    - Black Vermillion River --------------------- B

Missouri River Basin

- Missouri River ---------------------------------- B
    - Wolf River ----------------------------------- B
- South Fork Nemaha River ------------------------- B
- Big Blue River ---------------------------------- B
- Indian Creek ------------------------------------ B

Kansas River Basin

- Kansas River ------------------------------------ B
    - Delaware River ------------------------------ B
        - Perry Reservoir ------------------------ A
    - Wakarusa River ------------------------------ B
        - Clinton Reservoir ---------------------- A
    - Vermillion Creek ---------------------------- B
    - Soldier Creek ------------------------------- B
    - Stranger Creek ------------------------------ B
    - Mill Creek (Wabaunsee County) -------------- B

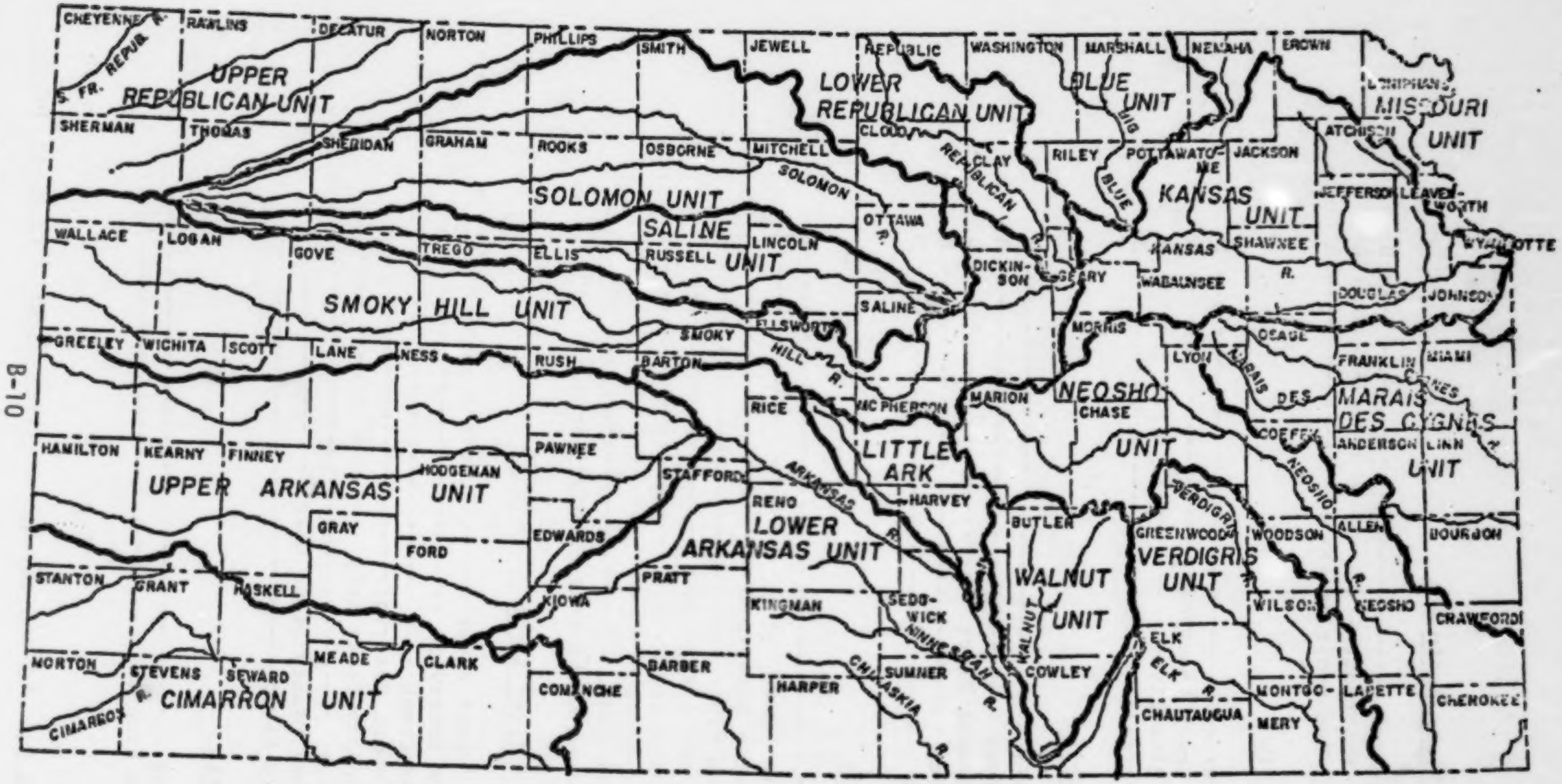
Marais des Cygnes River Basin

- Marais des Cygnes River ------------------------- B
    - Melvern Reservoir --------------------------- A
    - Dragoon Creek ------------------------------- B
        - Pomona Reservoir ----------------------- A
    - Lyon County State Lake ---------------------- A
- Marmaton River ---------------------------------- B
    - Crawford County State Lake ------------------ A
- Little Osage River ------------------------------ B

Saline River Basin

- Saline River ------------------------------------ B
    - Wilson Reservoir ---------------------------- A

(Authorized by K.S.A. 65-165 through 65-171d; adopted 13 April 1973)


UPPER REPUBLICAN UNIT
LOWER REPUBLICAN UNIT
BLUE UNIT
MISSOURI UNIT
SOLOMON UNIT
SALINE UNIT
KANSAS UNIT
SMOKY HILL UNIT
NEOSHO UNIT
MARAIS DES CYGNES UNIT
LITTLE ARK
UPPER ARKANSAS
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WALNUT UNIT
VERDIGRIS UNIT
CIMARRON UNIT
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REPUBLICAN R.
SOLOMON
BIG BLUE
OTTAWA R.
KANSAS R.
SMOKY HILL R.
MARAIS DES CYGNES R.
NEOSHO R.
ARKANSAS R.
NINNESCAH R.
CHIKASKIA R.
WALNUT
VERDIGRIS R.
ELK R.
CIMARRON R.
CHEYENNE
RAWLINS
DECATUR
NORTON
PHILLIPS
SMITH
JEWELL
REPUBLIC
WASHINGTON
MARSHALL
NEMAHA
BROWN
DONIPHAN
SHERMAN
THOMAS
SHERIDAN
GRAHAM
ROOKS
OSBORNE
MITCHELL
CLOUD
CLAY
RILEY
POTTAWATOMIE
JACKSON
ATCHISON
JEFFERSON
LEAVENWORTH
WYANDOTTE
WALLACE
LOGAN
GOVE
TREGO
ELLIS
RUSSELL
LINCOLN
OTTAWA
DICKINSON
GEARY
WABAUNSEE
SHAWNEE
DOUGLAS
JOHNSON
SALINE
MORRIS
GREELEY
WICHITA
SCOTT
LANE
NESS
RUSH
BARTON
ELLSWORTH
RICE
MCPHERSON
MARION
CHASE
LYON
OSAGE
FRANKLIN
MIAMI
COFFEY
ANDERSON
LINN
HAMILTON
KEARNY
FINNEY
PAWNEE
STAFFORD
RENO
HARVEY
BUTLER
GREENWOOD
WOODSON
ALLEN
BOURBON
GRAY
FORD
EDWARDS
PRATT
KINGMAN
SEDGWICK
WILSON
NEOSHO
CRAWFORD
STANTON
GRANT
HASKELL
KIOWA
MEADE
CLARK
COMANCHE
BARBER
HARPER
SUMNER
COWLEY
ELK
CHAUTAUQUA
MONTGOMERY
LABETTE
CHEROKEE
MORTON
STEVENS
SEWARD

MAJOR RIVER BASINS OF KANSAS

ENVIRONMENTAL PROTECTION AGENCY
Region VII, Kansas City, Missouri 64108

Date: January 20, 1972

Reply to Attn of: SVAN-TECH

Subject: Biological Information on Tomahawk and Indian Creeks, Kansas

To: Mr. Carl V. Blomgren
Director, Air & Water Programs Division

During September 1971 Macroinvertebrate samples were collected from Indian and Tomahawk Creeks. Sampling stations were selected to provide information on the Indian Creek Sewage Treatment Plant effluent and the effect on the downstream biota. The following is a list of biological stations and their locations:

1. IC-5.5 - Reeds Road crossing on Indian Creek
2. TC-2 - 200 yards upstream on Tomahawk Creek from confluence with Indian Creek
3. TC-0.5 - 80 yards downstream from Indian Creek Sewage Treatment Plant effluent on Tomahawk Creek
4. IC-3 - 1.7 miles downstream on Indian Creek from confluence with Tomahawk Creek
5. IC-1 - 4.3 miles downstream on Indian Creek from confluence with Tomahawk Creek

Figure 1 demonstrates the number and types of Macroinvertebrates collected at each station and their classification in regards to their sensitivity to pollution.

The numbers and types of Macroinvertebrates collected at IC-5.5 on Indian Creek reflected moderately good water quality. Seventy-three percent of the community were pollution sensitive forms in the Mayfly - Caddisfly group. At Station IC-3 downstream from the confluence of Tomahawk Creek and the influence of the Indian Creek Sewage Treatment Plant effluent, the aquatic organisms reflected water quality degradation. The pollution sensitive forms were reduced to only 20 percent of the population. Pollution tolerant forms such as the Midge Chironomids spp. and Snail Physa spp. predominated in the collection. The total number of organisms collected at this station was reduced to 61 compared with 180 organisms per square foot collected at IC-5.5. This reduction in total numbers also indicates environmental stress related to water quality in this reach of Indian Creek. Approximately 2 1/2 miles downstream from IC-3 at station IC-1, the Macroinvertebrates increased in numbers and types particularly in the pollution sensitive group indicating partial to complete recovery. The pollution sensitive forms comprised 74 percent of the population which totaled 183 organisms per square foot.

Tomahawk Creek which receives the Indian Creek Sewage Treatment Plant effluent exhibits very low flows during periods of dry weather. The Macroinvertebrates collected from this Creek were few in numbers and types compared with Indian Creek samples. The upstream station TC-2 however, produced 27 organisms per square foot of which, 82 percent were pollution sensitive types.

At station TC-0.5 downstream from the Sewage Treatment Plant effluent, the total number of organisms per square foot remained nearly the same but the pollution sensitive forms composed only 4 percent of the total population.

In summary, the Indian Creek Sewage Treatment Plant effluent has degraded portions of Tomahawk and Indian Creeks as reflected by the numbers and types of aquatic organisms inhabiting these reaches. The extent of degradation in Tomahawk Creek is approximately 200 yards downstream from effluent discharge to Indian Creek. The extent of degradation in Indian Creek persists for approximately 4 miles downstream from the confluence of Tomahawk Creek.

for Carl M. Walter
Stephen L. Bugbee
Aquatic Biologist

Attachment

APPENDIX B

LABORATORY CONTROL AND REQUIREMENTS

A. MEASUREMENT OF PLANT PERFORMANCE

Physical, chemical, biochemical and bacteriological analyses are used for process control and for an evaluation of the plant efficiency. The utilization of the data obtained from the various analyses serves to inform the operator of the waste characteristics, strength and treatability. Laboratory analyses can serve as a control to indicate the modifications in the plant operation to counteract adverse waste characteristics. Following is a group of analyses that will have to be performed when the proposed treatment facilities will be in operation.

1. Chemical, biochemical and physical tests to determine waste strength characteristics, and the wastes' amenability to treatment.
    a. Biochemical oxygen demand
    b. Total suspended solids
    c. Volatile suspended solids
    d. pH
2. Analyses to determine the presence of organic or inorganic matter which may be in the plant influent and which may be harmful to the treatment process.
    a. Grease
    b. Others as required
3. Analyses to determine the presence of concentration of certain inorganic and organic compounds that are necessary for the nutritional balance of biological life for the proper operation of the activated sludge process.

   - a. Phosphorous
   - b. Nitrogen tests
     - (1) Organic
     - (2) Ammonia
     - (3) Nitrate
   - c. Iron

4. Analyses necessary for the control of the activated sludge process.
   - a. Mixed liquor suspended solids
   - b. Sludge settleability (SDI)
   - c. Mixed liquor dissolved oxygen throughout the aeration tank
   - d. pH of mixed liquor
   - e. Visual (microscopic) examination of the mixed liquor solids. This will indicate to the operator the health and stability of the sludge as well as the presence of toxic materials.
5. Analyses for the evaluation and control of sludge dewatering and incineration.
   - a. Solids concentration of sludge
   - b. Filterability of sludge
   - c. Moisture content of dewatered sludge
6. Analyses on the treatment plant effluent to evaluate the plant efficiency.
   - a. Biochemical Oxygen Demand
   - b. Dissolved Oxygen
   - c. Phosphorous
   - d. Nitrogen
     - (1) Organic
     - (2) Ammonia
     - (3) Nitrate

e. pH

f. Suspended solids

g. Bacteriological analyses

   (1) Coliform Count

   (2) Fecal Coliform Count

B. TIME FOR TESTING

Routine testing; analyses and record keeping requires about 1000 to 1500 hours per year. Included are investigations of the receiving stream.

C. SPACE REQUIREMENTS

To fulfill the duties briefly outlined the complete laboratory would require approximately 650 square feet of laboratory space.

D. PERSONNEL REQUIREMENTS

The treatment facility will require two laboratory technicians beginning with Phase II operations. Laboratory personnel salaries are included in Appendix III, Operation and Maintenance and amount to approximately $12,960 per year, which are direct salary costs only.

JOHNSON COUNTY
MAIN SEWER DISTRICTS
6000 LAMAR
MAILING ADDRESS: P.O. BOX 39
SHAWNEE MISSION, KANSAS 66201

■ MYRON K. NELSON, Chief Engineer
TELEPHONE 432-4026

October 29, 1973

U. S. Environmental Protection Agency
1735 Baltimore - Room 249
Kansas City, Missouri 64108

Attention: Mr. Ed Vest

Re: C200381
Environmental Impact Statement

Dear Mr. Vest:

We have contacted the Kansas State Division of Water Resources as you requested to determine the intent of their comments to the Environmental Impact Statement review. We have supplied them a site plan, and they have requested additional information.

I gather from their comments to you, and their letter to us, that they are undecided whether they have jurisdiction over this project under the statutes they quoted to you. We will continue to work with the Division of Water Resources and supply them whatever information they need.

Very truly yours,

JOHNSON COUNTY MAIN SEWER DISTRICTS

C. Norman Engel

CNE/dp

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

SUBJECT: Water Quality Survey Report - Indian Creek Vicinity State Line Road - August 20 to 23, 1973 **DATE:** September 10, 1973

FROM: Garry L. Fisk
Director, Surveillance and Analysis Division, Region VII

TO: Charles V. Wright
Deputy Regional Administrator, Region VII

In response to your request for additional information on the water quality and flow patterns in Indian Creek resulting from discharges of treated sewage from the Indian Creek STP an investigation was made as outlined below.

Six sample collection locations were established in the area of interest.

STORET Number 190316 - IC-4 - RM-7.0 (Approx.)

Indian Creek at Park off Roe, north of I-435 - Station located above STP effluent and above Tomahawk Creek

STORET Number 190324 - TC-2 - RM-6.06 + 0.06

Tomahawk Creek above the Indian Creek STP effluent

STORET Number 190323 - TC-1 - RM-6.06 + 0.05

Indian Creek STP effluent at outfall from polishing lagoons

STORET Number 190315 - IC-3 - RM-4.45

Indian Creek at State Line Road bridge

STORET Number 190624 - IC-2.5 - RM-3.07

Indian Creek at Wornall Road bridge

STORET Number 280341 - IC-2 - RM-1.88

Indian Creek at Holmes Road bridge

Prior to the sample collection effort two complete recons were made of the entire reach. The bank was walked through the entire area and two Region VII technicians took a canoe down the entire reach. Seventeen pipes and/or streams were located in this reach. With the exception of Tomahawk Creek all pipes were either dry or flowing less than 10 gpm.

A dye study was made beginning at 0530 on August 20 to determine time of travel through the reach of interest. One liter of 40 percent Rhodamine B in acetic acid was dumped into the STP lagoon outfall and a monitoring station was established about 200 yards upstream of the State Line Road bridge. A Model III GK Turner fluorometer with continuous flow door was placed in a boat and a Rustrak recorder used to obtain a continuous record of fluorescence. The main body of dye arrived at the State Line Road station in 9 hours and 10 minutes after which the instrument setup was moved to the Holmes Road bridge and monitoring continued until the dye body arrived at this station 26 hours after the dump. The dye dump took place at RM-6.06 + 0.05. State Line Road crosses Indian Creek at RM-4.45 for an average flow time of 0.18 mile per hour. Holmes Road crosses Indian Creek at RM-1.88 for an average flow time of 0.16 mile per hour through the entire reach of interest.

Streamflow volume measurements were made at 4 stream stations at various times throughout the survey period with Price type current meters. These measurements and flows are summarized in the following tables. In the opinion of the field engineer in charge of the survey the accuracy of the flow measurements should be within ±10 percent at State Line Road where a fairly good cross section was available and within ±20 percent at other stations where sections were poor and most measurements were made in the dark. Measurements of volume discharged from the sewage plant polishing lagoon were made with a staff gage and liquid level recorder installed on the 6' Cipoletti weir installed at the lagoon overflow structure to Tomahawk Creek.

Station	Number Of Measurements	Average Flow cfs	20% Variation	Average Flow mgd
Tomahawk Creek (TC-2)	4	0.65	±0.13	-
Indian Creek at Roe (IC-4)	4	2.23	±0.45	-
STP Lagoon (TC-1)	10	6.49	±1.30	4.19
Indian Creek at State Line Road (IC-3)	9	10.25	±2.1	-
Indian Creek at Holmes Road (IC-2)	9	15.56	±3.1	-

Summary Of Flow Measurements
Indian Creek, Tomahawk Creek, And Indian Creek STP
August 19-23, 1973

Date August 1973	Time	cfs				
		IC-4	TC-2	TC-1 STP	IC-3	IC-2
19	1130			4.36		
20	0530			3.32		
	0730		0.75			
	0805	2.46				
	0900				7.57	
	1030				8.79	
	1200				9.51	
	1240			7.36		
	1330				11.70	
	1445	2.16				
	1500				13.74	
	1515		0.48			
	1600			8.69		
	2100					15.37
	2330					14.55
21	0130					13.39
	0300					14.44
	0510					13.01
	1240	2.36				
	1515			7.36		
	2400		0.67			
22	0330	1.93				
	0400			5.50		
	0410		0.27			
	0610			3.83		
	0615				10.54	
	0800				10.17	
	1000				10.10	
	1045			8.02		
	1200				10.14	
	1215			7.57		
	2005			7.14		
	2300					15.52

(Table continued on Page 4)

Summary Of Flow Measurements
(Continued)

Date August 1973	Time	cfs				
		IC-4	TC-2	TC-1 STP	IC-3	IC-2
23	0100					18.04
	0200		Rain			
	0300					18.12
	0500					17.67

The entire survey was carried out in a period unaffected by precipitation runoff. There were brief showers in the survey area beginning at 0200 on August 23 but these were not significant to the sampling effort.

The sample collection schedule was designed to sample the same body of water as it moved down the stream based on the data furnished by the dye study. Samples were collected for H_2O Temp., pH, BOD_5, Conductance, COD, and NFS as shown on the schedule below.

Station	River Mile	Flow Time Hours	Sample Times
IC-4 Above Plant	7.00	-	2300 8/21/73; 0100, 0300 and 0500 8/22/73
TC-2 Above Plant	6.06 + 0.06	-	Same as IC-4
TC-1 STP Effluent	6.06 + 0.05	0	Same as IC-4
IC-3 State Line	4.45	9.16	0600, 0800, 1000 and 1200 8/22/73
IC-2.5 Wornall	3.07	17.9	1600, 1800, 2000 and 2200 8/22/73
IC-2 Holmes	1.88	26.0	2300 8/22/73; 0100, 0300 and 0500 8/23/73

All samples were collected in duplicate by Field Investigations personnel and one portion furnished to the STP laboratory staff for analysis. The EPA portion of each sample was delivered to the Regional laboratory for analysis. All sample collection and analyses were performed according to agency or Standard Methods requirements, except some BOD_5 samples were held on ice as long as 9 hours prior to analysis.

Analytical results are attached. At the time of this study the stream was carrying a heavy load of plankton, as evidenced by the luxuriant green color. Plankton cells were also visible in the sample containers and probably influenced the precision and accuracy of the analytical results. Consequently, any attempts to mass balance the measured constituents would be severely affected by the precision and accuracy of both streamflow measurements and laboratory analytical results.

In addition to the plankton, heavy growths of periphyton were observed. Random sloughing off of this material could bias any analytical results if clumps of the periphyton material were collected in the sample container.

Some of the conclusions to be drawn from the survey are listed below.

1. The main influence on the water quality of Indian Creek is the waste discharge from the sewage plant which causes a major flow increase and a significant diurnal flow variation at the State Line Road station. The addition of the nutrient rich effluent causes an increase of the algal population in the stream, as shown by the solids levels at downstream stations and the visual observation of a bright green color to the stream water at all stations below the plant effluent.

2. A secondary influence on stream quality is apparent in the data by differences in solids, organic loading, and flow volumes between Wornall and Holmes Roads. It is our opinion that there must be an inflow of relatively clean groundwater in this reach with a daily volume during the survey of approximately three million gallons (4.5 cfs).

Attachment
Table

Parameter Code					403	95	310	340	680	530
Station	Sample Number	Date	Time	H_2O Temp. °C	pH	Specific Conductance µmhos/cm	BOD_5 mg/l	COD mg/l	TOC mg/l	NFS mg/l
IC-4	650000	8/21	2300	27.5	7.9	522	5	20/25	13	37
	650003	8/22	0100	26.5	7.9	527	4	24	14	29
	650006	8/22	0300	26.0	7.7	522	4	22	12	30
	650009	8/22	0500	25.0	7.9	547	3	24	13	84
TC-2	650001	8/21	2315	26.5	8.3	457	4	18	12	33
	650004	8/22	0115	25.5	8.0/8.0	464/470	3	N.R.	11	30
	650007	8/22	0315	25.0	7.9	436	3	16	11	26
	650010	8/22	0515	24.0	7.9/7.9	476/474	3	22	12	54/44
TC-1	650002	8/21	2320	26.0	7.4	948	14	57	27	23/35
	650005	8/22	0120	25.0	7.4	932	11	47	25	16
	650008	8/22	0320	25.0	7.4	932	11	50	23	15/16
	650011	8/22	0520	24.5	7.2	998	9	44	22	14
IC-3	650012	8/22	0540	24.0	7.4	882	17	50	24	39
	650013	8/22	0800	24.0	7.4	669	18	47/46	19	37
	650014	8/22	1000	26.0	7.6	720	19	47	21	41
	650015	8/22	1200	-	8.3	734	19	58	22	65/60
IC-2.5	650016	8/22	1400	28.0	8.1	842	20	55	20	55
	650017	8/22	1600	28.0	8.2	660	20	55/52	22	60
	650018	8/22	1800	28.5	8.4	711	19	91	21	64
	650019	8/22	2000	28.0	8.3	735	18	58	23	55
IC-2	650020	8/22	2300	27.0	7.8	786	10	39/27	17	29/34
	650021	8/23	0100	27.0	8.2	765	11	33	17	43
	650022	8/23	0300	26.0	8.0/7.9	781/770	12	38	17	34
	650023	8/23	0500	25.0	7.9	775	11	29	18	36

ENVIRONMENTAL IMPACT APPRAISAL

A. Project Identification

Applicant: City of Olathe, Kansas
Address: Kansas Avenue at Santa Fe, Olathe, Kansas 66061
Project: C200367
Location: Proposed treatment plant is one mile north of K-150 (Olathe-Martin City Road) on Black Bob Road; about 1 mile east of I-35. Two interceptors run northwest and southwest from the plant, roughly a mile each.

B. Assessment Summarization

1. Brief description of the project - Proposed project includes two interceptors to serve about two sections of land and a one-mgd activated sludge package plant with polishing lagoon. The plant is considered an interim facility to be retired when treatment facilities for the complete Indian Creek basin are available. Area is presently mostly farm land with a few residences and some commercial establishments along I-35.

2. Probable impact of the project on the environment - The project will retire three small package plants and one lagoon immediately and will improve the effluent in Indian Creek by increasing the degree of treatment. It will provide capacity for anticipated residential development in the area and will prevent future septic tank discharges to the stream.

3. Probable adverse environmental effects which cannot be avoided - There will be temporary disturbance of the land surface in the construction areas which should be corrected in one or two growing seasons. There might be adverse effects on the stream fauna due to effluent chlorination.

4. Alternatives considered with an evaluation of each - Based on the assumption that the area will shortly be developed, there is no acceptable alternative to a collection and treatment system. Since it is anticipated that there will be a downstream treatment facility within a few years, the package plant is the only economically satisfactory method of providing interim treatment.

5. Relationship between local short-term uses of the environment and maintenance and enhancement of long-term productivity - Present use of the area is mostly grazing and crop land. This will be converted to residences in the near future. The degree of land use and the valuation will be enhanced by the project.

6. Irreversible or irretrievable commitment of resources - Only those used in construction and power sources. The plant can be salvaged and the plant site returned to other use.

7. Public Objections to project, if any, and their resolution - There has been continuing publicity on the project for several months in the local papers and in the council proceedings and there has been no unfavorable public comment.

C. Since the project will be an overall improvement to the environment and any adverse effects will be of a temporary nature, an environmental impact statement is not considered necessary.

Carl V. Blomgren

Carl V. Blomgren
Director
Air & Water Programs Division

June 15, 1972

ENVIRONMENTAL PROTECTION AGENCY

December 20, 1973

Johnson County Main Sewer District, Kansas
Project C200301

Mr. Nyle H. Miller, Executive Director
Kansas State Historical Society
10th and Jackson Streets
Topeka, Kansas 66612

Dear Mr. Miller:

I appreciate your letter of November 21, 1973, concerning your review of the Draft Environmental Impact Statement for the Johnson County, Kansas project.

In view of the possibility that materials of archeological significance could be uncovered in the Indian Creek Plant expansion project, should it be implemented, the construction specifications would contain a provision whereby suspected remains would be investigated by calling them to the attention of the State Historic Preservation Officer and a reasonable period of time would be provided for the investigation. In regard to the construction of sewers in a large area not now served, the future projects would be brought to the attention of the Historic Preservation Officer via the OMB A-95 review process. At that time, a more definite location of proposed construction would be known and any relevant investigations could be conducted.

You indicate there is no specific data available in regard to significant archeological sites in the Indian Creek plant expansion project. Previous construction at the site, which has already covered much of the project area, reportedly did not result in archeological findings. On this basis, we will assume that no significant archeological sites exist in the area. Please advise at the earliest opportunity if information to the contrary is obtained.

Very truly yours,

Jerome H. Svore
Regional Administrator

SUPW:PMWalker:db:12/20/73:x2725

CONCURRENCES

SYMBOL	pmw:SUPW	cvb:AWPR	RGAD					
SURNAME								
DATE	12-20	12/20/73						

EPA FORM 1320-1

OFFICIAL FILE COPY

APPENDIX C

AGENCY COMMENTS

STATE OF KANSAS

AREA CODE 913
296-2436

Department of Administration

DIVISION OF THE BUDGET

STATEHOUSE—TOPEKA 66612

September 26, 1973

Mr. Jerome H. Svore
Regional Administrator
U. S. Environmental Protection Agency
Region VII
1735 Baltimore, Room 249
Kansas City, Missouri 64108

Re: Environmental Impact Statement for Project C200381, Indian Creek Sewage Treatment Plant, Johnson County; Clearinghouse Number 614-202 (ES)

Dear Mr. Svore:

The referenced environmental statement has been processed by the Division of the Budget under its clearinghouse responsibilities described in Circular A-95.

After review by interested state agencies, it has been found that the draft environmental impact statement does not adversely affect state plans. We are enclosing comments received from the Office of Comprehensive Health Planning and the Division of Water Resources, Department of Agriculture concerning this environmental impact statement for your information and referral.

Sincerely yours,

James W. Bibb
Director of the Budget

JWB:REK:beo

Enclosures

cc: Mr. Richard Davis, Executive Director
Mid-America Regional Council

State Clearinghouse
State of Kansas

RECEIVED
SEP 11 1973
HEALTH PLANNING

REQUEST FOR ACTION ON PROPOSAL (UNDER OFFICE OF MANAGEMENT AND BUDGET CIRCULAR A-95)

Agency Name Mr. Raymond Solee, Office of Comprehensive Health Planning	
Clearinghouse Number 614-202 (ES)	Applicant's Name Johnson County Sewer District
Expected Filing Date	Project Title Environmental Impact Statement for Project C200381, Indian Creek Sewage Treatment Plant, Johnson County*
RETURN NO LATER THAN September 21, 1973	Return to Division of the Budget, Department of Administration, 1st Floor, Statehouse, Topeka, Kansas 66612

The enclosed proposal has been submitted to the Division of the Budget under its clearinghouse responsibilities described in Office of Management and Budget Circular A-95. Your review of this proposal as it affects the interest of the state will be appreciated. Your appropriate comments concerning the proposal should be submitted to the Division of the Budget no later than the date specified above.

Comments filed on a proposal may include: (1) the extent to which the project is consistent with or contributes to the fulfillment of comprehensive planning within the state; (2) how the proposal relates to state objectives; and (3) the effect of the proposal on your agency's activities.

_____ No Interest

_____ Objections (discuss below)

_____ Request for Additional Information (discuss below)

_____ Request for a Conference

COMMENTS:

The Division of Environmental Health, Kansas State Department of Health, has been given ample opportunity to have input into this Environmental Impact Statement. We feel it is well written and that it meets the requirements of P.L. 92-500. However, this does not mean we agree with all observations and comments contained in the statement. We plan to be represented at the hearing on September 20 and plan to comment.

Raymond R. Solee ✓
Signature

*Additional information available at the Division of the Budget

State Clearinghouse
State of Kansas

DIVISION OF WATER RESOURCES
RECEIVED
SEP 10 1973
STATE BOARD OF AGRICULTURE

REQUEST FOR ACTION ON PROPOSAL (UNDER OFFICE OF MANAGEMENT AND BUDGET CIRCULAR A-95)

Agency Name Mr. Guy Gibson, Division of Water Resources, Department of Agriculture	
Clearinghouse Number 614-202 (ES)	Applicant's Name Johnson County Sewer District
Expected Filing Date	Project Title Environmental Impact Statement for Project C200381, Indian Creek Sewage Treatment Plant, Johnson County
RETURN NO LATER THAN September 21, 1973	Return to Division of the Budget, Department of Administration, 1st Floor, Statehouse, Topeka, Kansas 66612

The enclosed proposal has been submitted to the Division of the Budget under its clearinghouse responsibilities described in Office of Management and Budget Circular A-95. Your review of this proposal as it affects the interest of the state will be appreciated. Your appropriate comments concerning the proposal should be submitted to the Division of the Budget no later than the date specified above.

Comments filed on a proposal may include: (1) the extent to which the project is consistent with or contributes to the fulfillment of comprehensive planning within the state; (2) how the proposal relates to state objectives; and (3) the effect of the proposal on your agency's activities.

_____No Interest

_____Objections (discuss below)

_____Request for Additional Information (discuss below)

_____Request for a Conference

COMMENTS:

It appears that the project as outlined in the Draft Environmental Impact Statement, dated September 5, 1973, probably would be subject to K.S.A. 24-105, 24-126, 82a-301 to 305, inclusive.

Guy E. Gibson
Signature

HOME BUILDERS ASSOCIATION

3601 MAIN STREET • KANSAS CITY, MO. 64111 PHONE 816-753-6000

CHARLES W. KRAFT
President
JAMES L. YOUNG
Vice President
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Doug A. Young, Jr. (a)

JACK H. MAINPRIZE
Blue Springs &
Independence
LARRY P. MIKULICH
Clay & Platte Counties
T. CLAYTON PERRY
Grandview
ED D. POWERS
Jackson County
ROBERT L. WOODBURY
Johnson County
BOB F. SAILORS
Kansas City, Missouri
ED W. MENEFEE
Olathe
CLEO H. BEAIRD
Raytown
JOHN R. MARTIN
Wyandotte County

Charles E. Bleakley
Melvin H. Clingan
Carson E. Cowherd
Charles W. Kraft
John H. Moffitt
*A. C. Langworthy, Sr.
*J. D. Spears
*Ralph O. Taylor, Jr.
*Quinton R. Wells
*Larry Winn, Jr.
ALTERNATES
Donald D. Alpert
James M. Campbell
Richard T. Mika
Ross B. Wyss
James L. Young

Donald D. Alpert—1972
John H. Moffitt—1970-71
Wilson W. Siemens—1969
Carson E. Cowherd—1968
Melvin H. Clingan—1967
Charles E. Bleakley—1966
**William V. Thompson—1965
John G. Zimmerman—1964
**George W. Byers—1963
Alex S. Boscom—1962
M. David Evans—1961
Quinton R. Wells—1960
J. D. Spears—1959
Reed P. Byers—1958
Jack L. Bear—1957
E. R. Elgin—1956
A. C. Langworthy, Sr.—1955
Larry Winn, Jr.—1954
Stanley W. Cowherd—1953
Ralph O. Taylor, Jr.—1951-52
John Kroh—1949-50
George W. Miller—1948
John V. Walker, Jr.—1947
**H. V. Smith—1945-46
**Emil J. Schutzel—1943-44
**Ralph W. Wells, Sr.—1941-42
**Herbert L. Davis—1939-40
George M. Siemens, Jr.—1937-38

OLIN C. JONES

(a) Associate
rary Life Directors
**Deceased

MEMBER HBA

September 27, 1973

Environmental Protection Agency Regional Office
1735 Baltimore Avenue
Kansas City, Missouri 64108

Re: Johnson County Sewer District
Indian Creek Basin Expansion
Johnson County Project C200381

Gentlemen:

This letter is in response to the Environmental Impact Statement for Project C200381, site improvements at the Indian Creek Sewage Treatment Plant.

At present, the Home Builders Association of Greater Kansas City represents a number of developers and builders whose land is situated in the relevant Indian Creek area. These parties would include Garland Development Co., J. C. Nichols Co., Gene Kroh, and John Moffitt, to name only a few. Additionally, if expanion of sewer facilities is approved numerous other members of our Association will become involved in well planned development of this region.

At present, substantially all of the property south of I-435 lacks sewer facilities. This land represents future development property. To suggest delay of the currently proposed project (the most feasible and economical program when compared to the 6 remaining alternatives) is to effectively restrict improvement of what would otherwise remain pasture land. It must be pointed out that development, revenue and a healthy environment will certainly benefit by this measure of improving the present district as well as ultimate expansion of the plant.

If the goal of Leawood or any other governmental entity imposing jurisdiction over the relevant area is to intelligently and reasonably plan growth, sewer limitations are not adequate measures to effectuate this policy; well prepared and discussed zoning and subdivision regulations are the means by which cities should determine use and density factors within the municipalities. Additionally, limitations on sewer expansion may not ultimately restrict growth in the pertinent area since newly constructed homes could be furnished with septic tanks or privately owned treatment plants. As pointed out in the Environmental Impact Statement, "(n) either of these are considered desirable because of the difficulty in controlling operation and maintenance of private facilities and because these types of facilities often develop problems such as bad odors or undesirable discharges" (EIS,II-6).

In light of the fact that as per the present EIS report regarding the presently planned project's minimal environmental impact and the attractiveness and developability of the land effected by the sewage improvement, it must be concluded that expansion of present sewage facilities is inevitable. The issue, then, is one of time. At present, ultimate approval and expansion of Phase 1 through Phase II would involve an appreciable period of time. It has been indicated that the cost of delay is 1% per month. This means that since the original cost estimate in May, 1971 the cost of Project C200381 alone has increased 27% to present date - a cost of $181,926. Such costly delay must stop.

During the public hearing September 20, 1973 the principle concern of Leawood, Kansas residents was that of odor. We submit that all sewage treatment plants will emit some degree of odor, however, the present odor problems in the Indian Creek Sewage Plant relate not soley to general plant operation, but rather the overloading of those facilities and excessive use of bypass outlets which expose overloads of sewage to the open environment. As pointed out in the EIS, enlargement of the present plant would remedy this overloading problem (EIS-IV-16, 17). Additionally, it should be pointed out that the present project C200381 does not encompass enlargement of the present sewage treatment capabilities per se but rather proposes improvement of existing facilities to wit; relocation of the Indian Creek channel, a new access driveway to avoid flooding over the existing driveway, an intercepting storm sewer, perimeter fincing and various landscaping. Such changes will not affect odor levels, (EIS-IV-16).

The present site is well suited for the present project as well as the remaining phases, in fact, little if any new land would need be acquired to complete even Phase VI of the project. All interested parties must realize that this and all aspects of cost, timing and general environmental impact of the Project C200381 as well as future proposed phases should be assessed and accepted in order that the relevant unimproved areas of Johnson County may enjoy the orderly growth and attractive expansion which other areas of Johnson County have received.

With the above in mind, the Home Builders Association of Greater Kansas City, representing the many presently involved and prospectively interested developers, builders and building suppliers must endorse the presently proposed Project C200381 and remaining phases and will support any efforts to further their construction.

Sincerely,

Doug Patterson
General Counsel

DP:mu
CC: Jim Garland, Bill McLeese, Virgil Pollock, John Moffitt, Bob Woodbury, Phil Acuff

[illegible]

~~GG~~

EV

JOHNSON COUNTY
MAIN SEWER DISTRICTS
6000 LAMAR
MAILING ADDRESS: P.O. BOX 39
SHAWNEE MISSION, KANSAS 66201

MYRON K. NELSON, Chief Engineer

TELEPHONE 432-4026

September 27, 1973

Mr. Jerome H. Svore
Regional Administrator
U. S. Environmental Protection Agency
Region VII
1735 Baltimore
Kansas City, Missouri 64108

Re: Environmental Impact
Statement - Project C200381

Dear Mr. Svore:

Attached hereto are the comments relating to the Environmental Impact Statement. These comments should be considered in addition to those submitted by Mr. L. W. Weller of Black and Veatch, Consulting Engineers in our behalf.

Very truly yours,

JOHNSON COUNTY MAIN SEWER DISTRICTS

Myron K Nelson

Mryon K. Nelson, P.E.

MKN/vh

Enc.

cc: Board of County Commissioners w/encl.
Mr. John H. Morse, Hearing Officer w/encl.
Senator James B. Pearson w/encl.
Senator Robert Dole w/encl.
Congressman Larry Winn, Jr.w/encl.

JOHNSON COUNTY
MAIN SEWER DISTRICTS
6000 LAMAR
MAILING ADDRESS: P.O. BOX 39
SHAWNEE MISSION, KANSAS 66201
MYRON K. NELSON, Chief Engineer
TELEPHONE 432-4026

September 27, 1973

COMMENTS ON DRAFT OF ENVIRONMENTAL IMPACT STATEMENT

The following comments refer to the Environmental Impact Statement for Project C200381 - "Relocation of Indian Creek Channel at the existing Indian Creek Waste Treatment Plant.

SUMMARY SHEET

The description of the project does not clearly show that the only project presently planned is the channel improvement project. No request has been made for federal funds to construct any facilities that relate to waste treatment. The text of the statement in its entirety is directed to future projects that at present have not been planned. It should be made completely clear that if future projects are the basis for this statement that no additional Environmental Impact Statements will be required or needed for such projects when and if proposed. It is the feeling of the District that the presently proposed project is necessary whether or not any future enlargement of waste treatment facilities are constructed.

The summary states that cost effectiveness has been considered. However, the cost comparisons prepared at the request of EPA and at expense to the District are not presented in the Summary Sheet. Cost comparison data is buried within the report. Such data are sufficiently important to be included in the opening summary sheet along with the minimal description of the alternative solutions.

PARAGRAPH 4:

The last paragraph unduly discounts probable and viable alternates. Additional waste treatment plants are almost a certainty if authority to enlarge the present plant is not given. The words "privately owned" should not be used or considered. Any small plants constructed would be publicly owned and operated. At the present time such a plant is in existence serving Tomahawk Creek Sewer Sub-District No. 1. Another such plant is proposed by Olathe, Kansas and has received EPA approval for a construction grant (200367). Studies are presently being done for the District to determine the feasibility of constructing waste treatment facilities at other locations within the project area in lieu of enlarging the existing plant or in addition to constructing additional waste treatment plants on the present site. Written requests have been made by two substantial developers of land within the project area for permission to construct small waste treatment plants to serve their areas, either temporarily or permanently. Considerable residential development is presently occurring in the unsewered areas of Indian Creek and Tomahawk Creek. These developments are presently being served by septic tanks.

I-Background

Page 1-2 - "NEPA mandates a full disclosure of all reasonable alternates and their identifiable environmental impacts". We do not believe that this has been done.(See above on small waste treatment plants)

Page 1-13 (3) Emphasis should be placed on the last sentence on this page and the rest of the paragraph. Special consideration should be given to the fact that the waste treatment plant was constructed in an area remote from any residential development. All residential development in the area occurred after the plant was in use. The fact that this type of development occurred is a good indication that little or no adverse environmental effect resulted from the plant.

Page 1-19 - "Storm water runoff from Metropolitan areas in the Lower Basin and non-point sources of pollution related to agriculture contribute to the present water quality problems of Indian Creek". This statement may be reviewed in some relation to physical data. Please note that EPA was not able to relate flow accretions and effects on two separate studies in 1971 and 1973. Please note Appendix A to these comments taken from EPA - R2-73-261 - June 1973. Also please review the statement submitted by Mr. Donald Ballard, Mayor of Leawood, Kansas at the hearing on September 20, 1973. This statement relates to by-passing of sewage and other problems connected to the Leawood sewerage system. Since this by-passing occurs in small water courses tributary to Indian Creek and the Blue River, it undoubtedly has an adverse effect on the water quality of the stream and could account for some of the accretions of flow and pollutants that are presently unaccounted for in EPA studies. By-passing of sewage from the Leawood system could also account for part of the odor problem in the area.

Page 1-20 - Water Quality Standards - Reference to changing the classification of Indian Creek from a Class B to a Class A stream. The District objects to this change for the following reasons:

(a) Indian Creek would be the only Class A stream in Kansas.

(b) Without the effluent from the Indian Creek Waste Treatment Plant, Indian Creek would be an intermittent stream.

(c) At the present time, Indian Creek in Kansas is composed of the effluents from at least six (6) waste treatment plants.

(d) An EPA grant has been given for an additional waste treatment plant on Indian Creek (200367) a short distance above our Indian Creek sewerage system.

It does not seem reasonable that water from this stream could be considered of such quality for any use with the possibility of ingestion. Stream classification on the Missouri side varies from Class A at State Line to Class B at 59th St. and Class C at the Guinotte Dam to its mouth. It should also be noted that Brush Creek, a stream tributary to the Blue River at 59th St. was excepted from classification because of combined sewer overflow in Kansas City, Missouri. The stream classification by Missouri Clean Water Commission and approved by EPA does not appear consistent with the expressed intent to make Indian Creek a Class A stream. Please note Appendix B attached hereto showing stream classification. Also please note Appendix C, the Statement from the

Kansas State Department of Health presented at the Blue River Water Quality Standards Hearing of the Missouri Water Pollution Board, and Appendix D, an excerpt from the Minutes of the Hearing on Water Quality Regulations of the Kansas State Department of Health.

Page II-6 - Cost Effectiveness of Feasible Alternatives. It appears that there is an inadequacy of comment concerning the relative cost effectiveness for the feasible solutions. The Federal Water Pollution Act Amendments of 1972 (The Act) requires that adequate data and analysis demonstrate that the alternative be most cost efficient in order to comply with the requirements of the Act. Conversely when the EPA data is supplied as directed, the requirement ought to be exhibited in the outstanding portion of the Impact report where the results of the cost effectiveness analysis will be read. For the purpose of the subject report the Summary Sheet of the Environmental Impact Statement is deemed the appropriate location for presentation of costs.

Respectfully submitted,

JOHNSON COUNTY MAIN SEWER DISTRICTS

Myron K Nelson

Myron K. Nelson, P.E.

MKN/vh

TABLE 1. Characteristics of Urban Stormwater*

Characteristic	Range of Values
BOD_5 (mg/l)	1->700
COD (mg/l)	5-3,100
TSS (mg/l)	2-11,300
TS (mg/l)	450-14,600
Volatile TS (mg/l)	12-1,600
Settleable solids (ml/l)	0.5-5,400
Organic N (mg/l)	0.1-16
NH_3N (mg/l)	0.1-2.5
Soluble PO_4 (mg/l)	0.1-10
Total PO_4 (mg/l)	0.1-125
Chlorides (mg/l)	2-25,000†
Oils (mg/l)	0-110
Phenols (mg/l)	0-0.2
Lead (mg/l)	0-1.9
Total coliforms (no./100 ml)	200-146 x 10^6
Fecal coliforms (no./100 ml)	55-112 x 10^6
Fecal streptocci (no./100 ml)	200-1.2 x 10^6

* Taken from Reference 5.

† With highway deicing.

From EPA-R_2-73-261 June 1973

An Assessment of Automatic Sewer Flow Samplers

LOWER MISSOURI RIVER BASIN

Name of stream or lake	Present / Future	Irrigation	Livestock watering	Propagation of commercial fish	Propagation of warm water sport fish	Propagation of cold water sport fish	Industrial cooling water	Industrial process water	Drinking water supply	Hydroelectric power	Boating and canoeing	Fishing	Whole body water contact recreation	Receive effluents	Use Classification
MISSOURI RIVER - MINOR TRIBUTARIES															
Big Blue River Zone 1	P				x						x	x	x		A
	F				x						x	x	x		
Big Blue River Zone 2	P				x		x				x	x		X	B
	F				x		x				x	x		X	
Big Blue River Zone 3	P						x							x	Exception
	F						x							x	
Indian Creek	P				x		x					x	x		A
	F				x		x					x	x		
	P														
	F														
	P														
	F														
	P														
	F														

Big Blue River:

Zone 1 - Missouri-Kansas State Line to 59th Street, Kansas City

Zone 2 - 59th Street to Guinotte Dam (Brush Creek Tributary at 59th st). Brush C Not classified!

Zone 3 - Guinotte Dam to Mouth

Big Blue River - Zone 2 as delineated here is not suitable for whole body water contact recreation because of heavy industrialization along its banks and combined sewer overflow from Brush Creek. No such use of this zone has been observed. No effluents other than combined sewer overflow from Brush Creek and industrial cooling water will be allowed to Big Blue River-Zone 2.

THE KANSAS STATE DEPARTMENT OF HEALTH

TOPEKA
KANSAS

E. D. LYMAN, M. D., M. P. H.
Director of Health

Statement for Blue River Water Quality Standards Hearing of the Missouri Water Pollution Board

Independence, Missouri - 14 December 1971

The Missouri Water Pollution Board's water quality standards for the Blue River also directly affect Kansas communities and citizens. Approximately one-third of Johnson County (Kansas) is in the drainage basin of the Blue River and Indian Creek, a tributary. To be realistic, the Missouri Water Pollution Board's standards must be predicated upon quality of water flowing in the Blue River and Indian Creek across the state line from Kansas. Such water quality must be recognized and made a part of the plan.

Responsibility for establishing reasonable water quality standards for the Blue River in Missouri based upon actual needs rests with the Missouri Water Pollution Board. However, responsibility for implementation of a water pollution control plan in Kansas to comply with those standards rests with the Kansas State Department of Health. All point sources in Kansas which cause violation of the M. W. P. B. Blue River standards must be brought by the Kansas State Department of Health into a reasonable water pollution control implementation program. There are likely several practical alternates in each specific situation for preventing Kansas point source violation of Blue River water quality standards. It is the responsibility of the Kansas State Department of Health to evaluate the suitability of alternates and allow maximum flexibility for the municipality or corporation in achieving the needed goal.

Exportation of sewage from the Indian Creek basin may indeed be the control measure eventually selected. However, at this time policy should not be rigidly set to allow only the exportation method. There is a good probability that a high degree of sewage treatment with effluent disinfection would prevent Kansas point sources from causing violation of the M. W. P. B. water quality standards.

The Missouri Water Pollution Board has the extremely important responsibility for evaluating actual stream quality needs and establishing reasonable standards to reflect those needs without excessive or unnecessary water pollution control facilities.

Stream quality needs and standards for the Blue River should be presented by the Missouri Water Pollution Board to the Kansas State Department of Health along with a request for necessary Kansas action.

Establishment of any reasonable water quality standards must make allowance for natural pollution and that derived from uncontrollable non-point sources. Present conditions suggest an actual enhancement of the Blue River stream quality by the major Indian Creek sewage treatment plant effluents. Such renovated water is of better bacteriological quality than the Blue River about 50% of the time and Indian Creek about 90% of the time. At essentially all times, greater than 99. 9% occurrence, the Indian Creek major plant has an effluent of bacteriological quality far exceeding the fecal coliform standards for downstream water supply and recreational uses. Such Kansas standards provide for a maximum fecal coliform level of 2000 per 100 milliliters. The present renovated water flow from this plant of about 8. 5 cubic feet per second is more water than would otherwise be available in the Blue River at certain times during the year. It may well be decided that such flow is essential to a sound water management plan to assure recreational use of the Blue River.

Exportation of Johnson County sewage from Indian Creek will cost more than $50 million tax monies derived from both Kansans specifically and Missourians and Kansans federally. Before the decision for such massive expenditure is made the social conscience should be convinced that the need is real, the priority is fair, and the approach is practical.

There are many qualified people who will have reasonable foundation for their belief that the Blue River with exportation of Indian Creek renovated water will look no better, smell no better feel no better, and indeed swim no better. The substantial lessening of dry-weather flow will likely detract from the recreational value.

Water pollution must be controlled for the benefit of society. All sewage treatment plants discharging into Indian Creek must, without question, provide a high degree of treatment with disinfection. However, excessive control measures such as total flow exportation which do not bring reasonable benefit for the public expenditure are a disservice to society by preventing higher priority use of limited tax resources.

Melville W Gray

Melville W. Gray, P. E.
Chief Engineer and Director
Division of Environmental Health

Division of Environmental Health
Kansas State Department of Health
Topeka, Kansas

Appendix D

Excerpt from Minutes of Hearing on Water Quality Regulations - 31 August 1973

Gray: I have been nominated to comply with your request, Mr. Hearing Officer. I am Melville W. Gray, chief engineer and director, Division of Environmental Health. I would presume of course that representatives of EPA would come forth to take any exception to the interpretations that I might place upon their proposals for additions to our water quality standards.

(Reading from EPA letter to Governor Docking dated 2 August 1973):

"Designate the Big Blue river and Indian Creek, both in the Missouri River basin, for Class A, Primary Contact Recreation. Based on this designation we feel that these streams should be classified as Water Quality Limited."

Our feeling is this: we have not deemed it advisable to designate Indian Creek or the Blue River basin in Kansas (this is not the Blue River basin common between Kansas and Nebraska, but the one common between Kansas and Missouri) it has not been our intent, again, to adopt into regulations which have the effect of law, a standard or requirement which we know will not be met. Indian Creek as we are familiar with it in the state of Kansas is nothing but a storm sewer, in the sense it does not have a sustained flow of water throughout the year; it is an intermittent stream and the majority of the water which is tributary to Indian Creek is surface runoff from storm sewers, street drainage, etc. Indeed, the discharge of the Johnson County Main Sewer District treatment plant enhances the quality of water in that stream by keeping it a flowing stream, a moving stream. It is a very high quality effluent and it keeps the stream flushed so that we do not have stagnant ponds during non-rainfall, non-runoff seasons. Even if we were to prohibit the discharge of treated wastes from Johnson County to Indian Creek, it would not measure up to the quality standards required for body contact recreation or as a Class A, primary contact recreation stream as has been designated. I have been advised that the Class A primary contact recreation designation would be whole body submersion for recreational type activities. Mr. Hearing Officer, these are our comments, dutifully recognizing the responsibilities and directives as have been provided to the Environmental Protection Agency through 92-500, and regulations that have been adopted pursuant thereto. If there are further questions we would be pleased to comment on them.

BLACK & VEATCH
CONSULTING ENGINEERS

AREA CODE 816
TEL. 361-7000

1500 MEADOW LAKE PARKWAY
MAILING ADDRESS: P.O. BOX NO. 8405
KANSAS CITY, MISSOURI 64114

September 31, 1973

99
EV

Mr. Jerome H. Svore
Regional Administrator
Environmental Protection Agency
1735 Baltimore, Room 249
Kansas City, Mo. 64108

Dear Mr. Svore:

Attached are two copies of Black & Veatch's comments on the draft of the Environmental Impact statement dated September 5, 1973 pertaining to Project C 200381 - "Relocation of Indian Creek Channel and Other Improvements at the Existing Indian Creek Waste Treatment Plant...." This impact statement was a subject of a public hearing held Thursday evening, September 20 at the Johnson County Northeast Court House.

Yours very truly,

BLACK & VEATCH

L. W. Weller

amt
Enclosure

cc: Mr. Ed Vest

BLACK & VEATCH
CONSULTING ENGINEERS

AREA CODE 816
TEL. 361-7000

1500 MEADOW LAKE PARKWAY
MAILING ADDRESS: P.O. BOX NO. 8405
KANSAS CITY, MISSOURI 64114

September 20, 1973

COMMENTS ON DRAFT
OF
ENVIRONMENTAL IMPACT STATEMENT

These comments refer to the "Draft, Environmental Impact Statement for Proposed Waste Treatment Facilities, Johnson County Sewer District, Indian Creek Basin, Johnson County, Kansas. This statement was prepared in regard to Project C 200381 - "Relocation of Indian Creek Channel and other improvements at the existing Indian Creek Waste Treatment Plant...." The statement was prepared by the U. S. Environmental Protection Agency, Region VII, and dated September 5, 1973.

SUMMARY SHEET

Although the summary sheet presents a brief description of the project actually under consideration (C 200381) it does not clarify the fact that the impact statement which follows is on the ultimate expansion of the plant to serve all of the area that could be tributary to the plant site by gravity when those areas are fully developed. The proposed project, which includes relocation of the Indian Creek channel, other drainage improvements, perimeter fencing of the plant site, landscape improvements, the construction of a new access road and other items designed to enhance the operation and maintenance activities has merits in its own right and would be indicated whether or not the plant is expanded. No treatment units as such are included in the presently proposed project.

Paragraphs 3 and 4.

These paragraphs discuss respectively, "Environmental Impact and Adverse Effects" and "Alternatives". However, they fail to report the relative values for impact and cost effectiveness as developed in the report. Table 5, Page II-2 shows Plan A, Advanced Waste Treatment at Present Site, to be 3.3 times as cost effective as Plan E, the alternative plan which was next lowest in cost. Table 4 also shows Plan A to be 7.1 times as cost effective as Plan D ($7,296,000 for Plan A, $51,705,000 for Plan D), the plan shown by Table 5, Page II-16, to have the least impact based on environmental and other considerations. However, the total of the impact values shown for Plan A is 14 while the total for Plan D is 13. It would appear that on this basis there is very little difference in the impact of Plan A and Plan D, but Plan A is tremendously more cost effective than Plan D.

Paragraph 3

It should be considered that improvements to the plant may also reduce odor problems, air pollution from sludge handling and alleviate alternate or remove possible degradation of Indian Creek.

Paragraph 4

One alternative which may have to be considered but which is discounted as infeasible is the development of the area with septic tanks or small privately owned plants. This item is discussed at the close of Paragraph 4. However, if Plan A is not approved all of the other alternatives which do not contemplate expansion of the treatment facilities at the Indian Creek site have extremely high first costs and would be difficult if not impossible to implement fully until the population and development of the service area has increased greatly. The pressures for this development would be strong and the interim development until one of the other alternative plans could be implemented, would be served by septic tanks and small private plants.

I. BACKGROUND

Page I-18. "There are no endangered or locally threatened plant or animal species in the county." This statement has been made in cognizance of the population growth and increase in use of waste treatment facilities within the project area.

Page I-19. "Storm water runoff from metropolitan areas in the Lower Basin and nonpoint sources of pollution related to agriculture contribute to the present water quality problems of Indian Creek." This statement may bereviewed in some relation to physical and chemical data. EPA was not able to relate flow accreations and effects on two (2) separate studies in 1971 and 1973. In both studies there was an increase in flow from Mission Road to Holmes Avenue and concomitant changes in quality. The increases in stream flows and changes in water chemistry cannot be attributed wholly to the Indian Creek Plant. Flow accretions must be considered in the light of greater area contribution and this has been found by EPA to be factual. However, EPA has not in its investigations found the responsible point sources and is therefore unable to provide their individual flow and quality characteristics.

The effects of overland flow (nonpoint sources) on quality characteristics of samples taken at State Line and 103rd should be reviewed. Ponding and increases of parameters occur. Moreover there appear to be some other sources of contamination.

II. ALTERNATIVES

Page II-6. Cost Effectiveness of Feasible Alternatives. It appears that there is an inadequacy of comment concerning the relative cost effectiveness for the feasible solutions. The Federal Water Pollution Act Amendments of 1972 (The Act) requires that adequate data and analysis demonstrate that the alternative be most cost efficient in order to comply with Sections 301 or 302 of The Act or the requirements of Section 201 of The Act. Conversely when the EPA data is supplied as directed the requirement ought to be exhibited in the outstanding portion of the Impact report where the results of the cost effectiveness analysis will be read. For the purpose of the subject report the Summary Sheet of the Environmental Impact Statement is deemed the appropriate location for presentation of costs.

IV. ENVIRONMENTAL EFFECTS OF PROPOSED ACTION

Page IV-16. Under operation cognizance is well taken of the fact that odors in sewage treatment plants are comparable. In Table 5, page II-16 an attempt is made to rate potential odors at various sites rather than odors. The subject is made more controversial. The possible effects on people working in industrial areas is minimized while similar effects on people in residential areas is maximized. The report correctly states that odors can be held to a minimum at either type of location.

An additional comment is in order. The builders and developers of housing were well aware of the location of the treatment facility from its infancy. The initial treatment units were well buffered from residential units. Essentially the treatment facility was in a remote and sequestered location, but that was prior to the completion of I-435.

Page IV-17. - Last paragraph.

We do not agree that an appreciable possibility exists of scrubber effluent plumes condensing and creating hazardous conditions on Interstate 435. In Black & Veatch's letter of June 25, 1973 transmitted to EPA by Mr. Nelson's letter of July 19, 1973 and in comments submitted in August, it was pointed out that the stack gases would be subcooled. This would greatly limit the amount of moisture available for fogging, and as flue gas exit temperatures of between 125 to 150° F would be maintained, fogging could only occur during very low temperature conditions in the winter months. Ground fog does not occur in this area during the extremely low temperature conditions that would be required to produce vapor condensation in the exhaust gases. During the winter months the prevailing winds are from a northerly direction and would be blowing away from Interstate 435. The location of the incinerators would be over 1200 feet from the centerline of I 435.

V. SUMMARY - UNAVOIDABLE ADVERSE IMPACTS

Page V-1. Paragraph C.

Item 2 lists as one of the unavoidable adverse impacts the commitment of large amounts of natural gas for incinerator fuel. In the letters and comments referred to above, it was pointed out that fuel oil could be utilized in lieu of natural gas. It might also be considered that the sludge to be disposed of must be processed either at this plant or at some other location within the metropolitan area. If processed within the metropolitan area at a large plant, the sludge would be processed by incineration. Therefore, the fact that it would be processed at the Indian Creek Plant would not increase the amount of auxiliary fuel required above that required under alternative solutions. On this basis, the differential impact between processing at this plant and at an alternative point would be nil.

Item 3 lists "possible hazardous driving conditions occasionally." With reference to the remarks above concerning Page IV-17, we feel that the probability of such an event is negligible. We request that this comment be removed or at least revised to more clearly express the extreme improbability of such an event.

Submitted by

W Weller

L. W. Weller, Partner
BLACK & VEATCH Consulting Engineers
7616 Canterbury
Prairie Village, Kansas 66208

DEPARTMENT OF TRANSPORTATION
SECRETARIAL REPRESENTATIVE
REGION VII

Room 634
Federal Building
601 East 12th Street
Kansas City, Mo. 64106

September 27, 1973

Mr. Jerome Svore
Regional Administrator
Environmental Protection Agency
1735 Baltimore
Kansas City, Missouri 64108

Dear ~~Mr. Svore:~~ Jerry :

This is in response to your letter dated September 4, 1973, to Mr. Kemp, in which you request comments on the draft environmental impact statement for the Indian Creek Sewage Treatment Plant in Johnson County, Kansas. Following are the comments of the Department of Transportation.

On page IV-17, it is stated that possible hazardous conditions could occur on I-435 due to scrubber effluent plumes condensation. Within a one mile radius of the proposed plant expansion area, I-435 changes from a four-lane facility into a six-lane facility. Two interchanges are also present within the one mile radius. One of these interchanges, I-435 and U. S. 69, carries a heavy traffic volume. The creation of hazardous conditions due to condensation across this section of I-435 could be extremely serious. The final statement should be expanded to describe existing conditions, possible frequency of condensation occurring, and its impact upon I-435.

Thank you for providing the opportunity to comment on this draft Environmental Impact Statement. We look forward to receiving the final statement.

Sincerely,

Russ,

R. R. Waesche, RADM USCG (Ret.)
Secretarial Representative
Region VII

JOHNSON COUNTY KANSAS

Robert R. Davis
CHAIRMAN
COMMISSIONER THIRD DISTRICT
John J. Franke, Jr.
COMMISSIONER SECOND DISTRICT
Rex F. Price
COMMISSIONER FIRST DISTRICT

Office of the Board of County Commissioners

BOX 31-A
OLATHE, KANSAS 66061
782-0230

October 9, 1973

Mr. Jerome H. Svore
Regional Administrator
U. S. Environmental Protection Agency
Region VII
1735 Baltimore
Kansas City, Missouri 64108

Re: Environmental Impact
Statement - Project C200381

Dear Mr. Svore:

We have reviewed and evaluated the "Draft Environmental Impact Statement" for the proposed waste treatment facilities to serve the Indian Creek and Tomahawk Creek basins in Johnson County, Kansas. We have also evaluated a transcription of the public hearing held by your agency in regards to this statement. We recommend that your agency approve Plan A in the statement. We submit the following comments in regard to the statement:

I. Plan A provides for the orderly and incremental addition of facilities at the present waste treatment plant site as they are needed to serve to ultimate needs of the population of the Indian Creek and Tomahawk Creek basins. This plan also permits the costs incurred in construction to be coordinated with Johnson County's increase in ability to fund such projects through an expanded tax base from new development. We need such a plan to permit an upgrading of treatment processes to keep pace with the N.E.P.A. standards for 1977, and we want to be able to maintain this high level of performance.

II. The plans developed in the E.I.S. as alternates to Plan A are characterized by large scale expensive projects which must be constructed as single units with the capacity to serve the entire 40,000 acre basins. We have received opinions that, with our present tax base, we would be unable to sell bonds to fund these alternate plans, let alone supply the additional treatment increments required for basin development and to meet the upgraded N.E.P.A. water quality targets.

III. The E.I.S. states the Plan A is the most cost effective of all the plans presented based on a present worth evaluation. This relative cost data should be supplemented with real dollar figures to indicate the actual cost per acre and the cost per taxpayer. We had anticipated that, because of the wording in your regulations, socio-economic factors would be evaluated more extensively.

We estimate that Plan D, which rates only one point below Plan A for adverse environmental impacts in Table 5, would result in the following taxpayer costs:

$80,000,000	estimated project costs
80,000,000	estimated interest costs
$160,000,000	total cost to taxpayers

If applied to the present district area of approximately 13,000 acres, this plan would represent a cost to the taxpayers of slightly over $12,300 per acre. We know that there are an average of 3.5 residences per acre, so individual families (or homeowner) in the development portions of the districts could expect a tax bill of $3,500 to pay for facilities to transport effluent from the basin.

If we project rapid growth of the district to 20,000 acres, the costs would drop to $8,000 per acre or about $2,300 per family.

If we propose delaying construction of this transportation project for eight years until the districts have attained their ultimate growth of about 40,000 acres we would find that the total cost to the taxpayers would increase to about $320,000,000. This is based on our observation that construction costs tend to increase at the rate of 1% per month. The cost per acre would be $8,000 and the cost to the typical family would be $2,300.

We will not conduct this analysis for any of the other alternate plans because, according to Table 5, they all have more adverse impacts upon the environment than Plan A. We do not consider it reasonable that you would recommend a plan which is less cost effective and has a higher adverse environmental impact than Plan A.

IV. We are also concerned with potential costs and time delays related to the preparation of additional impact statements. It was our understanding, based upon the language of your agency's regulations, and upon a statement made by your deputy at one of our joint planning meetings, that this statement would deal with the ultimate development of treatment facilities for the basins. We have now been advised that each phase of construction could, at your discretion, require an E.I.S. We estimate that, based on the 1% per month factor, costs for our present project have increased at least $150,000. We have expended at least $50,000 in obtaining information and other activities related to the preparation of the E.I.S. We do not consider it unreasonable to estimate that your agency and other governmental units have expended at least $50,000 in preparing and reviewing this E.I.S. This $250,000 expenditure could be justified if it is applied to ultimate development of the basins. We do not think it can be justified if its scope is limited to project C200381. It seems that the requirement of additional impact statements would force the sort of uncoordinated fragmented planning your regulations seek to eliminate.

V. We think the E.I.S. is correct in stating that odors related to sludge handling and all other present and proposed treatment activities at the plant site will be minimal. We do not consider it reasonable to to expect that the odors described by the citizens of Leawood at the public hearing would be eliminated by removing treatment facilities from the present waste treatment plant site. We suggest that odors within the city of Leawood will become minimal when the deficiencies of that city's sewerage system which were described by Mayor Ballard are corrected. Analysis of the flow of the untreated sewage discharged to the surface waters by the City of Leawood's sewerage system could determine the source of pollution and increased flow your stream studies found it difficult to explain.

VI. We object to your agency promulgating Indian Creek as the only Class A stream in Kansas. We do not consider the state of Missouri's requirement for zero discharge of effluent into Indian Creek, or its treatment of Brush Creek. Both streams are tributary to the Blue River, both flow through similar areas, they are of comparable size and should be subjected to similar use requirements. The state of Missouri's water quality standards dismiss Brush Creek as being unworthy of classification because it is considered to be an open sewer.

VII. A decision by your agency to require transportation of effluent from the Indian Creek plant site in order to prevent the discharge of effluent to Indian Creek would be inconsistent with your recent decision to approve construction and partially fund a treatment plant with a planned capacity of two million gallons per day that will discharge effluent to Indian Creek.

VIII. Your statement that construction of a larger treatment facility at the site May produce air pollution and a POSSIBLE zone of degredation in Indian Creek indicates to us you have not determined that development of facilities at the present plant site would have an adverse impact upon the environment.

IX. In closing, we would like to stress that our planning to date has conformed to future land use plans developed by the Mid America Regional Council, the area planning agency. Our plant site still conforms

> to the national standards which recommend a 500 foot buffer zone between waste treatment facilities and residential areas. This zone would be wider to the north if residential encreachment had not occured after development of our treatment facilities began. Positive zoning action by the City of Leawood would assure a larger buffer zone to the south of the present plant site, if its residents consider this to be desirable.

We respectfully submit our comments upon the "Draft Environmental Impact Statement". We feel they substantiate our recommendation that Plan A be approved by your agency for the development of waste treatment facilities for the portions of the Tomahawk Creek and Indian Creek basins which lie within our jurisdiction.

Very truly yours,

Robert R. Davis

Robert R. Davis, Chairman

John Franke jr

John J. Franke, Jr., Commissioner

Rex F Price

Rex F. Price, Commissioner

cc: Senator Pearson
Senator Dole
Representative Winn

DEPARTMENT OF THE ARMY
KANSAS CITY DISTRICT, CORPS OF ENGINEERS
700 FEDERAL BUILDING
KANSAS CITY, MISSOURI 64106

REPLY TO
ATTENTION OF:

MRKED-BR 16 October 1973

Mr. Jerome H. Svore
Regional Administrator
U.S. Environmental Protection Agency
Region VII
1735 Baltimore
Kansas City, Missouri 64108

Dear Mr. Svore:

We have reviewed the draft environmental statement for Project C200381 Indian Creek Sewage Treatment Plant, Johnson County, Kansas.

The proposed waste treatment facilities do not appear to conflict with any current plans involving the Corps of Engineers. However, we have the following comments which could help to improve the statement.

Page I-3, Figure 1. The site plan was difficult to read as it did not reproduce well in the draft. This should be corrected in the Final report.

Page I-6, C.1. The projected 1990 Johnson County population figures (540,000 to 630,000) are very high. The Mid-America Regional Council's population projection for Johnson County in the year 2000 is 377,400.

Page I-6, C.2.a. Present land use should include commercial as well as those presently listed.

Page I-7, Figure 2. The Corps names for the projects shown on the vicinity map are Indian Lake and Tomahawk Lake. The official name of the river shown in the lower right hand corner of the map is the Blue River (U.S. Board on Geographic Name Decision List No. 6302).

Page I-10, Figure 4. This map did not reproduce clearly in the draft report. This should be corrected in the Final report.

Page I-8 and I-11, C.2.b.(1). The second sentence of this paragraph should be changed to "These lakes are a part of the Blue River Basin projects as authorized by the Flood Control Act of 1970 (P.L. 91-611)." In the third sentence, 2,300 acres should be substituted for 1,800 acres and 2,200 acres substituted for 1,000 acres. In the fourth sentence of the above paragraph, we question your findings that Tomahawk Lake will result in the loss of 20,000 people in the Tomahawk Basin by 2000. This figure seems high.

Page I-11, C.2.b.(2). The fourth sentence should read "The proposed Tomahawk Lake is located upstream or to the southwest of the treatment plant."

Page I-14, Figure 5. The future land use map does not include Tomahawk Lake and does not state the year that the map represents. In the legend, it is difficult to distinguish between the symbols for "Residential High Density" and "Light Industrial." This should be corrected in the Final report.

Page I-16, C.4. In general the section on existing fish and wildlife in the Indian Creek basin is brief and incomplete. No mention is made of birds of prey, song birds, small mammals, amphibians, reptiles, and others. It would seem that if the environmental impact of the proposed project is to be adequately assessed, the presence of all forms known to exist should be recognized. In the case of a sewage treatment plant, aquatic forms (amphibians, reptiles, fishes, aquatic invertebrates, shore birds, waterfowl, stream-oriented mammals, etc.) should be given specific attention. As an example, sampling in connection with a recent contract study conducted by the Midwest Research Institute for the Corps of Engineers on the proposed Blue River Basin project yielded a total of 14 species of fish in Indian Creek. Several species which were expected were not found in the samples (carp, channel catfish, crappie). In your narrative, no mention was made, however, of the only three species which occurred at all four Indian Creek sampling stations. These were the red shiner, the fathead minnow, and the green sunfish. If the data collected by MRI regarding the flora and fauna of the Blue River Basin would be useful to you, please contact our office. MRI has also discussed various species of fish and wildlife which are considered to be rare or endangered by either Missouri, Kansas, and/or the U.S. Department of the Interior. This information can also be made available to you if needed.

Page I-19, 6.a. Fourth sentence of paragraph. Tomahawk Creek generally flows northeastward. Fifth sentence of paragraph. It is approximately 4.5 river miles between the mouth of Tomahawk Creek and the mouth of Indian Creek not 3.5 miles.

MRKED-BR 16 October 1973
Mr. Jerome H. Svore

Page I-19, 6.a. Second paragraph on the page. Reference numbers should be placed at the end of the sentence or paragraph in which the information from the referenced sources is utilized, not at the beginning. The second paragraph should read "Surface water records for Indian Creek at the 103rd Street and U.S. Highway 69 permanent gaging station indicate discharges are extremely variable. This gage is located approximately 4 miles upstream from the sewage treatment plant. Records for the gage are available from March 1963 to September 1971. During this 8-year period, the average discharge was 23.9 c.f.s. A maximum discharge of 5,250 c.f.s. was recorded on June 5, 1965. There are periods of no flow that occur at various times each year." The third paragraph should read "Surface water records from May 1939 to September 1972 are available for the Blue River at Bannister Road. The average discharge for the 33-year period was 139 c.f.s. A maximum discharge of 41,000 c.f.s. occurred on September 13, 1961. Periods of no flow occurred during September 1939 to February 1940 and again in August 1946."

Page II-3, Figure 7. The Blue River treatment plant is drawn in the wrong location as is the Kansas River.

Page II-9, B.2.b. First paragraph, second sentence. "Plan B would export all wet and dry weather treated flow from both basins, while Plan F would export only treated flows from the lower Indian Creek and Tomahawk Creek basins to Turkey Creek."

Page III-4, Figure 8. Legend symbols for Final improvements - Indian Creek STP and Phase I, Phase II, and Phase III - Tomahawk Creek STP are identical. This should be corrected.

Page III-7, 2.b.(2). The word "pulverization" should be substituted for "comminution" in the first sentence. Words that are unfamiliar to the general public should not be used in an environmental statement unless they are defined.

Additional comments and corrections have been made in the draft that is attached.

Thank you for the opportunity to comment on this draft statement.

Sincerely yours,

Paul D Barber

1 Incl
As stated

PAUL D. BARBER
Chief, Engineering Division

OFFICERS

Chairman
EDWARD J. BAUMAN
Presiding Judge
Clay County, Mo.

First Vice Chairman
ROBERT R. DAVIS
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Johnson County, Ks.

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Executive Director
RICHARD F. DAVIS

MID-AMERICA REGIONAL COUNCIL MARC
20 West 9th St., Third Floor, Kansas City, Mo. 64105, Phone 816-474-4240

October 25, 1973

Mr. Jerome H. Svore
Regional Administrator
Region VII
1735 Baltimore
Kansas City, Missouri 64108

Re: Environmental Impact Statement - Indian Creek Wastewater Treatment Plant, Johnson County, Kansas

Dear Mr. Svore:

The subject report was reviewed by the Mid-America Regional Council staff. At the August MARC meeting members of the Council were apprised that the report was available for their review and comment. Also notice of the receipt of the statement and request for comments was published in the September newsletter, ReMARC, a copy of which is enclosed for your information.

No written comments have been received by our office concerning the impact statement. We assume that all parties wishing to comment have communicated their remarks to the Environmental Protection Agency directly.

As requested, enclosed is a copy of the recently published "Estimates and Projections - Kansas City Metropolitan Region 1973". This report has revised estimates of regional growth trends based on latest U.S. census data. We recommend that the new projections be used on Page I-6 of the EIS, in place of the figure 630,000 population by 1990.

Sincerely,

Thomas E. Neal

Thomas E. Neal
Engineering Department

TEN:llb
Enc.

SERVING **TWO** STATES, **EIGHT** COUNTIES AND **110** CITIES IN THE KANSAS CITY METROPOLITAN REGION

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

~~GG~~
~~EV~~
RM

ER-73/1223

NOV 7 1973

Dear Mr. Svore:

As requested in your letter of September 4, 1973, this Department has reviewed the Draft Environmental Statement for Project C200381, Indian Creek Sewage Treatment Plant, Johnson County, Kansas.

As a general comment, we believe that this statement is overly brief and lacking substance in several areas of concern to this Department. In particular we believe the statement does not adequately address near-future changes in the immediate area which may significantly affect the operation of this plant or relate to impacts of plant operation.

Geology and Water Resources

The statement should, but does not, include specific information on the type of surficial deposits to be excavated, as well as the proposed disposition of the 15,000 cubic yards of earth to be excavated. However, significant adverse impact related to geologic conditions is not anticipated.

The ground-water resources of the site are known and appear to have been adequately considered as to possible impact from expansion of the site.

The environmental statement recognizes the potential construction of the Corps of Engineers Tomahawk and Indian Creek reservoirs in the immediate vicinity of the sewage treatment plant. However, the only reference to these two projects is made in the first section of the environmental statement. It is important to point out that the Corps of Engineers is proposing to construct three flood-control reservoirs in the Blue River Basin which will be in the general area of the sewage treatment plant. In addition to the two reservoirs mentioned, another reservoir, Wolf-Coffee, is also proposed. The Corps of Engineers is presently in the process of land acquisition for these projects, although it is not certain at this time whether they will be constructed. These three reservoirs will control approximately 46 percent of the Big Blue River watershed above the U.S. Geological Survey gauge .4 miles down stream from Indian Creek. The environmental statement does not consider and relate the effects of effluent discharges from the sewage treatment plant and the Corps of Engineers reservoirs construction and reservoir operation. It seems appropriate that these conditions should be addressed in the environmental statement.

Precautions to protect the plant from peak stages estimated for a 100-year flood under present conditions have been considered. However, as the drainage basins above the plants are only lightly urbanized at present, but developing rapidly, we suggest that the statement should further include consideration of the effects urbanization will have on flood flows and associated peak stages.

On page IV-10 in the paragraph at the top of the page, the following statement is made, "An increase in volume of effluent from 7 mgd to an average flow of 42.8 mgd will result in increased total loads to the stream. However, the concentration of organic and inorganic substances will be the same or less than is presently being discharged." These statements should describe in more detail how the heavier loads will result in lower concentrations of organic and inorganic substances and how this may affect stream quality.

On page IV-13 in the paragraph at the top of the page, it is stated "it may form a zone of degradation similar to the one presently found...." It seems logical that it will form a zone of degradation that will be greater than that which presently occurs. This should be further explained.

On page V-1, the first paragraph, the following statement is made. "Ultimate effluent from the Indian Creek Sewage Treatment Plant Site, with three treatment plants, may degrade portions of Indian Creek to some extent, even though EPA promulgated water quality standards for the State of Kansas will not be violated." It seems that the alternate effluent will degrade portions of Indian Creek with a very good possibility that it may be worse than presently occurs. We feel this matter should be further discussed and explained.

Wildlife Resources

It is stated (page I-18), "There are no endangered or locally threatened plant or animal species in the county." Unpublished data gathered as a result of studies in connection with the Corps of Engineers projects does not agree with this statement. Three species of birds that are considered rare in the State of Kansas have been sighted in the area. These include the red-shouldered hawk, bald eagle, and osprey. In addition, the project area is on the edge of the known range of the Indiana bat, a species that is included on the National Endangered Species List. No specific data are available on the occurrence or abundance of this species in the drainage of the Blue River.

Page II-18 should be more explicit in describing the effects of discharges on the aquatic habitat.

Land Use

On page I-11 in the paragraph at the top of the page, it is stated "An ultimate population of 140,000 with the construction of the reservoir, or 160,000 without the reservoir, is expected...." It seems likely that construction of reservoirs within the urban area will not only hasten development of the surrounding area but result in an increase in population.

Figure 4, an aerial photograph, is titled "Present land uses around existing plant." However, the photograph has not been annotated or interpreted to show land uses, and the reproduction is not sufficiently clear to permit an independent interpretation of this in parts of the area. As a result, the title is somewhat misleading. On Figure 5, a map of Future Land Use, the patterns for Residential High Density and for Light Industrial cannot be differentiated in the legend. We suggest that the quality of these illustrations be improved.

On pages II-5 and II-6, references are made to the "do-nothing alternative." It is indicated this alternative would provide the opportunity for new developments to occur on either septic tanks or privately owned treatment plants of which neither are considered desirable. A possible solution to this problem may be to consider zoning to prohibit development or guide development as another alternative. By doing so, it is possible that some of the seven alternatives, described on pages II-1 through II-4, would be more feasible if effective zoning were implemented.

Cultural Resources

No established or studied units of the National Park System appear to be adversely affected by the proposal, nor does the proposal appear to adversely affect any site registered as a National Historic, Natural or Environmental Education Landmark, or any site listed as eligible for such registration.

The statement should reflect consultation with the National Register of Historic Places, and discuss whether any National Register properties will be affected. If the project has an effect on a National Register listing, the statement should reflect further compliance with Section 106 of the National Historic Preservation Act of 1966 (P.L. 89-665).

The statement does not clearly confirm consultation with the State Historic Preservation Officer for the state involved. The final environmental statement should reflect that he was consulted to determine whether the proposal will affect any cultural site which may be in the process of nomination to the National Register of Historic Places and contain a copy of his response.

The statement should discuss the action taken or proposed to professionally determine the presence or absence of archeological resources in the project area and the effect of the proposal upon any such resources present. The statement should further reflect procedures to be followed should previously unknown archeological resources be encountered during project development. Page IV-19 of the statement indicates that "no unique archeological, historic, scientific, or cultural areas will be affected" by construction of proposed interceptor sewers, but fails to reference the sources for this information. In addition, the statement fails to adequately consider possible impact to cultural resources which may exist within all areas to be disturbed by proposed construction activities.

In order to accomplish this, consultation should be effected with the State Archeologist (Mr. Thomas A. Witty, Kansas State Historical Society, Memorial Building, 120 West 10th Street, Topeka, Kansas 66612) and the Department of Anthropology, University of Kansas (Dr. Alfred E. Johnson, Professor of Anthropology, Department of Anthropology, University of Kansas, Lawrence, Kansas 66044) to determine if known archeological remains exist within areas to be affected by the proposed action. The State Historic Preservation Officer (Mr. Nyle H. Miller, Executive Secretary, Kansas State Historical Society, 120 West 10th Street, Topeka, Kansas 66612) to determine if any cultural values listed on or eligible for the National Register of Historic Places exist within the project area.

All areas to be disturbed by construction activities should be systematically inspected by a professional archeologist to determine the existence of presently unrecorded archeological remains.

Should the above-mentioned consultations and survey reveal the presence of any cultural values that will suffer adverse impact as a result of this proposed action, a detailed plan for preservation or mitigation through salvage excavation should be compiled and included in the final environmental statement, along with an indication of arrangements that have been made to implement such a plan. All sources for archeological and historical data should be referenced in the final environmental statement.

If archeological remains are encountered during construction activities, operations should be suspended and immediate notification provided to the State Archeologist and the Midwest Archeological Center of the National Park Service (2605 North 27th St., Lincoln, Nebraska 68504; telephone 402-475-3666).

We appreciate the opportunity to review this statement and we hope that the foregoing comments will be of assistance to you in preparation of the final environmental statement.

Sincerely yours,

Deputy Assistant Secretary of the Interior

Mr. Jerome H. Svore
United States Environmental
Protection Agency
1735 Baltimore - Room 249
Kansas City, Missouri 64108

Kansas State Historical Society 10th AND JACKSON STREETS / TOPEKA, KANSAS 66612
PHONE (913) 296-3251

NYLE H. MILLER Executive Director
EDGAR LANGSDORF Deputy Director
MRS. GEORGE T. HAWLEY Librarian
ROBERT W. RICHMOND State Archivist
STANLEY D. SOHL Museum Director
THOMAS A. WITTY Archeologist
JOSEPH W. SNELL Curator, Manuscript Division
FORREST R. BLACKBURN Curator, Newspaper-Census Division
RICHARD D. PANKRATZ Historic Sites Survey
BLANCHE E. TAYLOR Office Manager

November 21, 1973

Mr. Jerome H. Svore
Regional Administrator
Environmental Protection Agency
1735 Baltimore Room 249
Kansas City, Missouri 64108

EV

Dear Mr. Svore:

We have reviewed the draft environmental statement for the proposed expansion of the Indian creek waste treatment facilities in Johnson county, Kan. On the basis of the information supplied, it does not appear that there are presently any buildings or sites within the affected area (the upper and middle Indian creek basin) which are in the process of nomination to the National Register of Historic Places.

There is no specific data in regard to significant archeological sites which might be destroyed or damaged by the planned expansion. However, archeological surveys along proposed highway routes in that locale and the reports of collectors have identified significant sites in that drainage area. The treatment plant is situated at the confluence of two streams. That is a classic location for Indian sites. Because of the likelihood of the presence of archeological sites, we would recommend that a preliminary survey be conducted by a trained archeologist to determine whether sites are present and that a professional appraisal be made of the significance of what is found.

There is also the possibility that the relocation of the Indian creek channel may expose deeply buried habitation levels. The contractor should be advised of this possibility and of the need to preserve and report such finds for investigation.

It is our understanding that a resultant effect of this project will be the construction of sewers in a large area previously not served. Whether this construction will have an adverse effect on buildings and sites of historical and archeological interest cannot be stated since the placement of the sewers is not known. The possibility exists that archeological sites may be adversely affected by sewer construction. A preliminary survey with consideration for possible realignment or salvage operations may be in order. The county and local historical societies should be consulted for identification of places in the area which may have local historic value.

With kindest regards and best wishes, I am

Cordially,

Nyle H. Miller
Executive Director and State
Historic Preservation Officer

NHM:rj

OFFICERS: President, Dudley T. Cornish, Pittsburg; 1st Vice-President, A. J. Stanley, Jr., Leavenworth; 2nd Vice-President, Homer E. Socolofsky, Manhattan; Secretary, Nyle H. Miller, Topeka; Treasurer, Edgar Langsdorf, Topeka.
EXECUTIVE COMMITTEE: Jerome Harman, Columbus; Perce Harvey, Topeka; Frank Haucke, Council Grove; Philip H. Lewis, Topeka; Wilford Riegle, Emporia; John W. Ripley, Topeka; A. Bower Sageser, Manhattan; Floyd R. Souders, Cheney; Paul E. Wilson, Lawrence.

Office of the Mayor

Charles B. Wheeler, Jr., M.D., J.D., Mayor

City of Kansas City, Missouri
Heart of America

29th Floor, City Hall
Kansas City, Missouri 64106

816 274-2595

~~JHS~~
~~EVW~~
AWPR
~~GA~~
E V

October 1, 1973

Mr. Jerome H. Svore, Regional Administrator
U. S. Environmental Protection Agency Reg. VII
1735 Baltimore
Kansas City, Missouri 64108

Dear Mr. Svore:

Perusal of the Environmental Impact Statement for enlargement of the Indian Creek Waste Treatment Plant brings to mind many aspects and objectives of the Federal Water Pollution Law: advanced waste treatment, best available technology, zero discharge, stream quality suitable for bathing, regional waste treatment management, increased federal grants, authorization for multi-billion appropriations, etc. As Mayor of Kansas City, I have consistently supported environmental programs, and the City Council has assured State and Federal Governments that our programs of financing, engineering design and land acquisition would be conducted at a level that will ensure our ability to proceed with our construction program as rapidly as the State and Federal funds are made available to us.

It seems to me that the Indian Creek watershed of Missouri and Kansas, and the entire Blue River watershed of both states, offer excellent potential for coordinated regional management, with a single waste treatment plant located at the mouth of the Blue River, rather than a series of plants proliferated throughout the basin, each discharging to a watercourse that flows through developed portions of the metropolitan area. Kansas City has proceeded with this objective, and through intergovernmental contracts, our sewerage system already serves the Blue River drainage areas of Independence, Raytown, and Grandview, Missouri, the Indian Creek - Dykes Branch portion of Leawood, Kansas and the cities of Mission Hills and Westwood, Kansas.

Any possibility of expanding our service area to include additional segments of the Kansas portion of the Indian Creek and Blue River drainage basins should be very fully explored.

Kansas City's master sewerage plan includes a future interceptor sewer along the east bank of the Blue River from our existing waste treatment plant southwesterly to the Kansas Line, and a second interceptor sewer along Indian Creek from the Blue River to the State Line to more adequately serve the area in Kansas that has already contracted for sewer service through our system. Detailed engineering design and right-of-way acquisition is well advanced for the new interceptor sewers along Indian Creek in Missouri and along the Blue River below the mouth of Indian Creek. These works can be placed under construction after Federal funds are made available for the eligible project. If equitable sharing in the project cost can be arranged by the service area in Kansas, Kansas City would redesign the project to provide capacity as desired and contract for long-term sewerage service to the area in Kansas. This is in accordance with established policy whereby Kansas City now provides sewer service to numerous jurisdictions in Clay, Platte and Jackson Counties, in addition to those named in a preceeding paragraph.

The desirability of such an arrangement was recognized many years ago by Kansas City and by the Commissioners of Johnson County, Kansas. In 1966, the two jurisdictions jointly engaged a consulting engineer to estimate the cost of sewers designed for joint use. The report was favorably received by both jurisdictions at that time, but the Kansas portion of the cost was deemed by the County Commissioners to exceed the capability of the County. It was only after this decision that Kansas City elected to design and construct its East Blue River system with capacity only for the Missouri portion of the Basin, plus the areas of Kansas already under long-term contract with Kansas City. It may be possible, however, that the increased Federal and State Aid now available might enable Johnson County to assume an equitable share of the project costs.

In my opinion, the regional system constitutes the only truly satisfactory long-term solution for the watershed. It is thought provoking that Johnson County is planning substantial enlargement of its existing Indian Creek plant at about the same time Kansas City is preparing to construct its East Blue River Interceptor up to Indian Creek. Both jurisdictions are preparing for major sewerage expenditures at the same time and in the same watershed. This has never occurred in the past, and perhaps will not again occur in the foreseeable future.

What I consider essential is that present unsanitary conditions not be permitted to continue any longer than absolutely necessary. Your impact statement does not address this point. Your agency has not offered an educated guess regarding the best and quickest method for prevention of effluents into Indian Creek. I believe your agency should have compared regional planning effects with local. Therefore, as the statement presently stands, I cannot endorse it.

I urge that every consideration be given to a regional approach before either of the two jurisdictions proceed with individual projects. In any evaluation that may be required, I assure you the full cooperation of this City.

Sincerely,

Charles Wheeler

Charles B. Wheeler, Jr., M.D., J.D.
Mayor of Kansas City

GJH : CBW:dr

~~LAY~~
~~AA~~
EV

CITY OF Leawood KANSAS
9615 LEE BOULEVARD 66206
642-5555

October 3, 1973

Mr. Jerome H. Svore, Regional Administrator
U. S. Environmental Protection Agency
1735 Baltimore
Kansas City, Missouri

Re: Indian Creek Sewer District
No. 1 - Proposed Expansion

Dear Mr. Svore:

At the September 17, 1973 meeting of the Leawood, Kansas City Council the attached resolution was adopted. It is requested the resolution as well as this letter be made a part of the record of public hearing held by the E.P.A. September 20, 1973.

In addition to the statements of official city policy as stated in the resolution, I wish to express some personal viewpoints concerning the regional scope of the problem.

It is my firm belief that effective waste water treatment is a metropolitan problem and as such requires a regional solution.

According to recent accounts it is estimated there are presently 160 governmental agencies directly or indirectly involved in the administration and treatment of waste water within the Kansas City Region. The result has been an ever increasing maze of governmental jurisdiction, each trying to cope with a portion of the problem, each lacking sufficient authority to effectively address the problem.

A regional approach would allow functional consolidation of sewer districts on a watershed basis to achieve administration and treatment by area of need rather than the present system of fragmental administration by artificial political boundaries.

CITY OF Leawood KANSAS

9615 LEE BOULEVARD 66206
642-5555

October 3, 1973

Page 2.

Mr. Jerome H. Svore

In closing I would urge the E.P.A. to recommend denial of the proposed Indian Creek Sewer Treatment Plant expansion and recommend waste water treatment through the Blue River interceptor on a watershed basis.

Truly yours,

Donald S Ballard

Donald S. Ballard
Mayor

cc
Mr. Richard F. Davis
Mid-America Regional Council
Kansas City, Missouri

DSB:T:S

Enc.

RESOLUTION NO. 293

WHEREAS, the Indian Creek Main Sewer District No. 1, Johnson County, Kansas has applied for Federal financial assistance to provide improvements to the existing plant site, and

WHEREAS, the proposed project is the preliminary phase in preparing the site for increased sewage treatment capacity from 70,000 population equivalent to 110,000 population equivalent, and

WHEREAS, the eventual development of the existing treatment plant site would increase the capacity to 428,000 population equivalent, and

WHEREAS, residents of Leawood have frequently experienced odors and air pollution from the plant during the past years, and

WHEREAS, the proposed project may produce additional odor problems due to increased amounts of sewage being treated, air pollution from future sludge incineration, and a possible zone of degradation in Indian Creek below the plant site

NOW, THEREFORE, BE IT RESOLVED that the Governing Body of the City of Leawood, Kansas, hereby opposes the expansion of the Indian Creek Plant and suggests the treatment and disposition of sewage can no longer be treated as a purely Johnson County problem, but rather as a metropolitan problem to be dealt with cooperatively on bi-state area wide basis.

BE IT FURTHER RESOLVED, the City's opposition shall be made part of the record of public hearing before the United States Environmental Protection Agency on September 20.

Adopted by the Governing Body this 17th day of September, 1973.

Donald S. Ballard Mayor

ATTEST:

J. Oberlander City Clerk

JOHNSON COUNTY, KANSAS

Office of the Department of Health

6000 LAMAR
SHAWNEE MISSION, KANSAS 66202
384-1100

John A. Rowe, Ph.D.
Acting Director

October 5, 1973

Mr. Jerome H. Svore
Regional Administrator
U.S. Environmental Protection Agency
Region VII
1735 Baltimore
Kansas City, Missouri

Dear Mr. Svore:

The following comments refer to the "Environmental Impact Statement", for the proposed waste treatment facilities to serve the Indian Creek and Tomahawk Creek basins in Johnson County, Kansas.

You are aware, undoubtedly, that perhaps the most imposing environmental problem in Johnson County is the excessive use of septic tanks for domestic waste disposal in the fringe areas of the county where growth has been most rapid, and where community sewerage systems do not exist. Last year the Health Department's Environmental section investigated 725 complaints relating to faulty operation of septic tanks. This year, because of increased precipitation there has been a constant stream of complaints and the total number will far exceed that of 1972.

It is the policy of the Health Department to advocate and urge the building of sewerage systems and treatment facilities as rapidly as they can be built.

We feel that the greatest adverse environmental impact in many areas of our county is the presence of domestic sewage on the surface of the ground. Because of the nature of soil and topography, septic systems are considered an inferior method of domestic waste disposal. This is born out by the great number of failures.

We consider the present Indian Creek waste treatment plan well designed and operated in accordance with good operating practices. We have seen no evidence that the discharge of effluent either causes degradation of Indian Creek or contributes to public health problems.

We would be unhappy over any actions that could cause delay or changes in the planning and extension of community severage systems in the fringe areas of the county. The basins of the Indian Creek and Tomahawk Creek are presently being developed and we hope that the aggravation and extension of our septic tank problems can be minimized in these areas by the rapid extension of sewer lines and the enlargement of the present waste treatment plant.

Sincerely,

John A Rowe PhD

John A. Rowe, Ph.D.
Acting Health Director

JAR/cs

cc: Board of County Commissioners
Mr. J. H. Morse, E.P.A. Hearing Officer
Senator James B. Pearson
Senator Robert Dole
Congressman Larry Winn, Jr.

STATE OF MISSOURI
DEPARTMENT OF COMMUNITY AFFAIRS
505 MISSOURI BOULEVARD
JEFFERSON CITY, MISSOURI 65101
(314) 751-4114

CHRISTOPHER S. BOND
GOVERNOR

ALFRED C. SIKES
DIRECTOR

October 19, 1973

Mr. Jerome H. Svore
Regional Administrator
United States Environmental Protection Agency
Region VII
1735 Baltimore - Room 249
Kansas City, Missouri 64108

Dear Mr. Svore:

Subject: U. S. Environmental Protection Agency Draft Environmental Impact Statement for Indian Creek Sewage Treatment Plant, Johnson County, Kansas, EPA Project C 200381 DOCA 73090026

The Office of Planning, as the designated State Clearinghouse, has coordinated a review of the above referred draft environmental impact statement with various concerned or affected state agencies pursuant to the Office of Management and Budget Circular A-95 (Revised), Section 102(2)(c) of the National Environmental Policy Act, and a joint memorandum from the Office of Management and Budget and the Council on Environmental Quality.

Attached please find the comment received. No other state agency having the opportunity to review this statement had comments to offer at this time.

We appreciate the opportunity to review the statement and anticipate this letter being attached to the draft environmental impact statement.

Sincerely,

Terry L. Rehma
A-95 Coordinator

RECEIV
OCT 23 1973
GRANTS ADM

TLR:dk
Enclosure
cc: Mid-America Regional Council

Reproduced from best available copy.

STATE CLEARINGHOUSE ENVIRONMENTAL REPLY SHEET

RETURN TO:

State Clearinghouse Coordinator
Department of Community Affairs
Office of Planning
505 Missouri Boulevard
P.O. Box 1157
Jefferson City, Missouri 65101

DOCA No. [illegible]
Date Sent: Sept 21
Please Return By: Oct 5

The enclosed draft Environmental Impact Statement is submitted for the appropriate state agencies' comment and views pursuant to Section 102(2)(c) of the National Environmental Policy Act of 1969 (PL91-190).

AGENCY MAKING COMMENTS:

Missouri State Highway Commission
State Highway Building
Jefferson City, Missouri 65101

COMMENTS & VIEWS:

The Draft Environmental Impact Statement covering a project for the improvement at the Indian Creek Sewage Treatment Plant by the Environmental Protection Agency for Tomahawk and Indian Creek Basins in Johnson County, Kansas, will have no affect on State highways in Missouri.

L. V. McLaughlin

Assistant Chief Engineer - A-95 Review Agent
Reviewer's Signature & Title

October 13, 1973
Date

UNITED STATES OF AMERICA
GENERAL SERVICES ADMINISTRATION
Region 6
1500 East Bannister Road
Kansas City, MO 64131

EV ✓

SEP 11 1973

Mr. Jerome H. Svore
Regional Administrator
Environmental Protection Agency
1735 Baltimore - Room 249
Kansas City, Missouri 64108

Dear Mr. Svore:

In response to your request of September 4, 1973, our staff has reviewed the draft environmental statement entitled Project C200381, Indian Creek Sewage Treatment Plant, Johnson County, Kansas. General Services Administration (GSA) has no immediate plans for a Federal Building or any other improvements near the subject project; neither does GSA operate any facilities that might be affected by this proposal. Therefore, the proposal, as stated, will not adversely affect any GSA operations.

The draft environmental statement appeared to be in good order and we have no comments to offer at this time.

Sincerely,

JEFFREY P. HILLELSON
Regional Administrator

Enclosure

Keep Freedom in Your Future With U.S. Savings Bonds

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

CENTRAL REGION
601 EAST 12TH STREET
KANSAS CITY, MISSOURI 64106

SEP 27 1973

Mr. Jerome H. Svore
Regional Administrator, Region VII
U. S. Environmental Protection Agency
1735 Baltimore - Room 249
Kansas City, Missouri 64108

Subject: Draft Environmental Impact Statement
EPA Project C200381
Indian Creek Sewage Treatment Plant
Johnson County, Kansas

Dear Mr. Svore:

Review of the subject proposal does not disclose any conflicts with the plans or programs of this agency.

Thank you for the opportunity to comment.

Sincerely,

WILLIAM C. KNOEPFLE
Chief, Airports Division

Enclosures:
Notice of Public Hearing
Draft EIS

ECV

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
KANSAS CITY AREA OFFICE
TWO GATEWAY CENTER, 4TH. AND STATE
KANSAS CITY, KANSAS 66101

REGION VII
Room 300 Federal Office Building
911 Walnut Street
Kansas City, Missouri 64106

11 OCT 1973

IN REPLY REFER TO:
7.1PTP:LL

Mr. Jerome H. Svore
Regional Administrator
Environmental Protection Agency
Program Planning Branch
1735 Baltimore
Kansas City, Missouri 64108

Dear Mr. Svore:

Subject: Comments on Draft Environmental Statement
Project C200381
Indian Creek Sewage Treatment Plant
Johnson County, Kansas

This letter is in response to your request for comments in accordance with Section 102(2)(c), Public Law 91-190, regarding the subject Draft Environmental Statement. Please be advised that this office has reviewed the subject matter and found no apparent significant environmental impact on any HUD projects within our jurisdiction.

Sincerely,

William R. Southerland
Area Director

~~HL~~

~~PW~~

~~Vst~~

RMM

File

UNITED STATES DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE

Box 600, Salina, Kansas 67401

September 17, 1973

Mr. Jerome H. Svore
Regional Administrator
United States Environmental
Protection Agency
1735 Baltimore - Room 249
Kansas City, Missouri 64108

Dear Mr. Svore:

We appreciate the opportunity to review and comment on the draft of the Indian Creek Sewage Treatment Plant, Johnson County, Kansas, Project C200381.

We have reviewed the subject draft environmental statement and find this project has no significant environmental impact on the resources within our agency's expertise or jurisdiction.

Very truly yours,

D. R. Robertson Acting

Robert K. Griffin
State Conservationist

cc:
Fred H. Tschirley, Acting Coordinator of Environmental Activities, Office of the Secretary, USDA, Washington, D. C.
Kenneth E. Grant, Administrator, SCS, Washington, D. C.

RECEIVED
SEP 19 1973
GRANTS ADMINISTRATION

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
P.O. Box 459, Columbia, Missouri 65201

September 26, 1973

Mr. Jerome H. Svore
Regional Administrator
Environmental Protection Agency
1735 Baltimore - Room 249
Kansas City, Missouri 64106

Dear Mr. Svore:

Your office submitted us a copy of the environmental statement on the Indian Creek Sewage Treatment Plant, located in Johnson County, Kansas, for review and comment. Since this development is in the State of Kansas, our Kansas State Office has responded on this matter. We concur in their comments.

Sincerely,

J. Vernon Martin

J. Vernon Martin
State Conservationist

cc:
Fred H. Tschirley, Acting Coordinator of Environmental Activities, Office of the Secretary, USDA, Washington, D.C.
Kenneth E. Grant, Administrator, SCS, Washington, D.C.

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
Washington, D. C. 20250

OCT 2 4 1973

Mr. Jerome H. Svore
Regional Administrator - Region VII
United States Environmental
  Protection Agency
1735 Baltimore - Room 249
Kansas City, Missouri 64108

Dear Mr. Svore:

We have been requested to respond to your letter of September 4, 1973, to Mr. Fred H. Tschirley, Acting Coordinator of Environmental Activities, U. S. Department of Agriculture, requesting review and comment on the Draft Environmental Statement for Project C200381, Indian Creek Sewage Treatment Plant, Johnson County, Kansas.

We have reviewed this environmental statement and find the proposed action has no significant environmental impact on resources or programs within this Department's jurisdiction.

Sincerely,

Joseph W. Haas, acting

William B. Davey
Deputy Administrator for
  Water Resources